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# Journal of Educational Research

OFFICIAL ORGAN OF THE
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VOL. IX — MAY, 1924 — No. 5

CONTENTS

| | Page |
|---|---|
| A SURVEY OF EDUCATIONAL RESEARCH IN 1923. By Clifford Woody | 357 |
| THE CONCENTRIC METHOD OF STUDY AND TEACHING. By John Wesley Field | 382 |
| THE STATUS OF CERTAIN BASIC LATIN SKILLS. By Leo J. Brueckner | 390 |
| EDUCATIONAL TESTS FOR RETARDED SCHOOL CHILDREN. By A. Leila Martin and L. A. Pechstein | 403 |
| A GRAPHIC CHART FOR REPRESENTING EDUCATIONAL ACHIEVEMENT SCORES. By M. R. Trabue | 411 |
| CHILD ACCOUNTING—II-HISTORICAL ASPECTS. By Arthur B. Moehlman | 415 |
| EDITORIALS | 424 |
| REVIEWS AND ABSTRACTS | 431 |
| NEWS ITEMS AND COMMUNICATIONS | 436 |
| INDEX FOR VOLUME IX | |

Entered as second-class matter at the Post Office at Bloomington, Illinois under the act of March 3, 1879.

# Journal of Educational Research

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Official Organ of the Educational Research Association

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The JOURNAL OF EDUCATIONAL RESEARCH is published at Bloomington, Illinois, monthly, except July and August by the Public School Publishing Co. The subscription price is $4.00 $4.20 in Canada or Mexico; and $4.50 in other foreign countries.

The editorial office is at Columbus, Ohio. Address all communications on editorial matters to B. R. Buckingham, Director of Bureau of Educational Research, The Ohio State University, Columbus, Ohio.

Subscriptions and all communications about reprints or other business matters should be addressed to the Public School Publishing Company at Bloomington, Illinois.

JOURNAL *of* EDUCATIONAL RESEARCH

Volume IX MAY, 1924 Number 5

# A SURVEY OF EDUCATIONAL RESEARCH IN 1923*

CLIFFORD WOODY
*University of Michigan*

In keeping with the traditions of this organization, the president must at this time attempt a review of the educational research work published during the past year, must offer interpretations of the general tendencies manifested, and must venture some conjectures of worth-while avenues for future investigations. In fulfilling this difficult task, your leniency is requested. The impossibility of considering in the allotted time all the research studies made available during the year is obvious. Moreover, certain important studies may have failed to come to the notice of the writer, and he may have misinterpreted some of those to which he has devoted attention. He does not proclaim himself a specialist in all fields of educational research.

The issues of the following periodicals from January, 1923, to January, 1924, were scrutinized for articles dealing with educational research: *American School Board Journal, American Journal of Psychology, Educational Administration and Supervision, Elementary School Journal, Journal of Educational Psychology, Journal of Educational Research, Psychological Review, School and Society, School Review,* and *Teachers College Record.* From these periodicals and from books, bulletins, and monographs a classification of research materials was attempted.

## A GENERAL SURVEY

The summary, appearing in Table I, shows the articles classified under five familiar types of educational research and under

*Presidential address delivered before the Educational Research Association, at Chicago, February 28, 1924.

TABLE I. NUMBER OF ARTICLES AND PAGES DEVOTED TO THE DIFFERENT TYPES OF RESEARCH DURING THE CURRENT YEAR

| | Number of Articles | Number of Pages |
|---|---|---|
| I. Administrative Research | | |
| Pupil Accounting | 13 | 93 |
| School Costs | 3 | 24 |
| Teaching Load | 3 | 36 |
| Teacher Rating | 7 | 68 |
| Unclassified | 2 | 17 |
| Total | 28 | 238 |
| II. Instructional Research | | |
| Curriculum Building | 7 | 51 |
| Diagnosis of Errors | 5 | 46 |
| Evaluation of Curricula | 10 | 62 |
| Evaluation of Instructional Methods | 7 | 64 |
| Standardization of Instructional Material | 4 | 34 |
| Teacher Training | 4 | 50 |
| Time Distribution and Choice of Subjects | 2 | 17 |
| Total | 39 | 324 |
| III. Research Involving Educational and Mental Tests | | |
| Educational Tests | | |
| New Tests | 11 | 111 |
| Miscellaneous | 5 | 36 |
| Total | 16 | 147 |
| Mental Tests | | |
| Constancy of the I. Q. | 8 | 49 |
| Descriptive Articles (Revised) | 8 | 90 |
| Effectiveness of Classification | 5 | 62 |
| Mental Tests and Guidance | 6 | 44 |
| Testing Different Races | 8 | 60 |
| Testing Surveys | 5 | 49 |
| Unclassified Articles | 13 | 81 |
| Total | 53 | 435 |
| IV. Research in Statistical Methods | | |
| First Aids (Keys, Tables) | 6 | 48 |
| Prediction | 13 | 112 |
| Reliability and Validity | 32 | 280 |
| Standardization of Measurement Technique | 6 | 55 |
| Yes-and-No Technique (Method of Scoring) | 2 | 13 |
| Miscellaneous | 4 | 26 |
| Total | 63 | 534 |
| V. Research in Experimental Studies | | |
| Reading | 5 | 36 |
| Psychology of Attitudes | 2 | 21 |
| Total | 7 | 57 |
| VI. Miscellaneous Research Studies | | |
| Attendance of Children at Movies, Outside Work and Influence of School | 11 | 57 |
| Grand Total | 217 | 1,792 |

the too-often-used caption *Miscellaneous research studies.* The articles so classified did not fit into the other types of research nor did they yield themselves to classification under additional headings because few of them dealt with similar subject matter.

The general summary shows that the enumerated periodicals contained 217 different articles, 1,792 pages, dealing with various phases of educational research. Of these, 69 articles, 582 pages, were classified as *Research involving educational and mental tests;* 63 articles, 534 pages, as *Research in statistical methods;* 39 articles, 324 pages, as *Instructional research;* 28 articles, 238 pages, as *Administrative research;* 7 articles, 57 pages, as *Research in experimental studies;* and 11 articles, 57 pages, as *Miscellaneous research studies.*

If the number of articles and pages published in these journals is any criterion, the major interest of research workers during the past year has been in investigations involving educational and mental tests and the study of statistical methods. These two types of research are closely related and by some investigators may be considered a single type. However that may be, the space they occupy reflects the interest in them and stands as evidence that the "testing bubble" has not yet burst. Instructional research was given considerable attention also, although the space devoted directly to it was considerably less than that devoted to the aforementioned types of research. Comparatively speaking, administrative research and experimental studies have been in the marginal region of interest during the past year.

## Administrative Research

According to the summary of articles the major interests in administrative research were pupil accounting and the rating of teachers.

*Pupil Accounting.*—The topics included under pupil accounting range from Peters' article on "Progress of Kindergarten Pupils in the Elementary Grades" to Holzinger's article on "The Retarded College Professor." Peters compared the progress of 187 pupils who attended kindergarten with an equal number of

pupils of similar intelligence who did not attend kindergarten and asserted that the kindergarten children made more rapid progress so that by the time they had finished grade v they had saved 53 years of human life.[1] Holzinger showed that about three years intervene between the professor's Bachelor's degree and his Master's and about seven or eight years between his Bachelor's degree and his Doctorate.[2]

The articles by Siehl and Smith[3] dealt with the reasons which pupils ascribe for dropping out of school and re-entering later. Siehl found that of the 431 pupils enrolled in a night school at Cincinnati only 15 percent left school because of economic reasons, while the main reasons given were "longing for change," "desire to go to work," and "failure in studies." Siehl also reports that 68 percent of the students in night school were attending for vocational reasons and that 34 percent were preparing to enter a profession. These facts show the sobering effect of real life and may forecast the day when the Antioch idea will receive more consideration at the hands of administrative officers. Smith reported that of 6,559 pupils who were eligible to return to the University of Wisconsin in the fall of 1920, 1,960 did not return. Of those, 1,042 had unsatisfactory records. Financial difficulties, health, and desire to go to other institutions were the chief reasons assigned for leaving by the 918 students who had satisfactory records. The study suggested that the employment of so many young and inexperienced instructors was partly responsible for the failures in student work. The significance of the first of these articles lies in its attempt to ascertain why students who have dropped out of school re-enter later and, of the other, the indication that pupil accounting is receiving attention in institutions of higher learning.

Four other studies classified under pupil accounting dealt

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[1] Peters, W. J. "Progress of Kindergarten Pupils in the Elementary Grades." *Journal of Educational Research*, 4:117-26, February, 1923.

[2] Holzinger, Karl J. "The Retarded College Professor." *School and Society*, 18:729-30, June 30, 1923.

[3] Siehl, B. H. "A survey of night high schools." *School Review*, 31:533-39, September, 1923. Smith, C. A. "Why Students Leave College." *Educational Administration and Supervision*, 9:339-44, September, 1923.

with institutions of higher learning. Roberts of the University of Washington attempted to determine the reliability of high-school records as means of determining college entrance and especially to estimate the effect of enforcing the "two-thirds" rule which would exclude the students graduating in the lowest third of the class. He found that of 581 students who presented D's and E's for entrance—who would have been barred—190, or 32.7 percent, made satisfactory grades, while 132 students, or 22.7 percent, of these permitted to enter by the "two-thirds" rule failed. He concluded that, while the high-school record was a fairly satisfactory instrument for determining college entrance, it should be supplemented by measures of the student's motives, industry, and willingness to stick to the job.[4] This study was supplemented by another in which Roberts ranked the different high schools on the basis of the records received at the University of Washington and found that proximity to the university was a factor encouraging immature and less able young people to attend. Proximity to the university, also, tended to be a factor in reducing scholarship since this group included the commuting student who spent much of his time in going to and from the university and who was open to the temptation of trying to cope with social life at home as well as that of the university.[5] In one of the two remaining university studies Jesse B. Davis tried to show that college-entrance requirements were a hindrance to progressive movements in the public schools of New England,[6] while in the other, Edmonson and Mulder concluded that instruction was as effective in a class of 150 students as in a class of 50.[7] If these latter results are substantiated by further investigation, they are highly significant.

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[4] Roberts, Alexander C. "Problems of College Admission." *School and Society*, 17:246-52, March 3, 1923.

[5] Roberts, Alexander C. "The Comparative Ranking of High Schools Based upon Records at the University of Washington." *Journal of Educational Research*, 8:404-13, December, 1923.

[6] Davis, Jesse B. "The Influence of College-Entrance Requirements on the Public High Schools of New England." *School Review*, 31:445-51, June, 1923.

[7] Edmonson, J. B., and Mulder, J. J. "Size of Class as a Factor in University Instruction." *Journal of Educational Research*, 9:1-12, January, 1924.

Three studies under pupil accounting dealt with the effect of attendance on school achievement. It seems well to mention that Odell found a positive correlation between the average school marks and the percent of attendance, but practically no correlation between percent of attendance and increase in achievement age.[8] Harlan divided 900 pupils in grades IV to VIII, inclusive, into three sections—those who had progressed in normal time, less-than-normal-time, and more-than-normal-time—and determined the scores made by each group on the Monroe Silent Reading test and Monroe Reasoning tests in Arithmetic. He found that those in the less-than-normal-time achieved higher scores than the other groups and that from two to six additional years in the more-than-normal-time group had little influence on the score obtained.[9] He concluded that the *amount* of time spent in a grade is not so important as *how* and by *whom* spent. The significance of these articles lies in the fact that educational and mental tests have been utilized in trying to determine the influence of attendance on school achievement.

*Teacher Rating.*—Sixty-eight pages in the magazines examined were devoted to various aspects of teacher rating. Freyd proposed a graphic rating scale by means of which the profile on some seventeen traits assumed to be fundamental to the acquisition of a teaching technique was procured.[10] Touton presented a self-rating score card for secondary-school principals in which he suggested that each principal score himself on each of the following qualities: personal equipment, business management, supervision of the teaching staff, social adaptation of the curriculum, student relations, and community relations.[11] Willard and Williams proposed that quality of teaching be measured by the closeness of identity of the achievement and intelligence quo-

[8] Odell, C. W. "Effect of Attendance upon School Achievement." *Journal of Educational Research*, 8:422-32, December, 1923.

[9] Harlan, Chas. H. "Years in School and Achievement in Reading and Arithmetic." *Journal of Educational Research*, 8:145-55, September, 1923.

[10] Freyd, Max. "A Graphic Scale for Teachers." *Journal of Educational Research*, 8:433-39, December, 1923.

[11] Touton, F. C. "Self-rating Score Card for Secondary-School Principals." *Journal of Educational Research*, 8:335-45, November, 1923.

tients.[12] Bushnell proposed the rating of teachers by the standing of their students in higher courses.[13] No doubt each of these suggestions has some merit and all save the self-rating score card are interesting to the research worker, but impractical from the standpoint of the administrator.

*Supplementary Remarks.*—Space will not permit even brief mention of the articles in the periodicals on school costs or the teaching load. Any discussion, however, of the administrative research published during the year would be incomplete without mention of the publications of the Educational Finance Inquiry (Macmillan Company). These represent the leading contributions in the field of school finance and warrant the closest scrutiny by all school administrators. The monograph on school finance by Swift points out the methods of analyzing the financial conditions within a state.[14] Bain of the Division of Research and Reference of Cleveland public schools prepared an excellent study in which he measured the current expenditures of the Cleveland schools in terms of the purchasing power of the dollar and in terms of daily enrollment.[15] Fowlkes of the University of Wisconsin also has an unpublished study in which he makes a cost analysis of education in the various cities of Wisconsin.[16]

All administrators should be interested in a committee report of the Michigan State Teachers Association in which is given a detailed set of uniform records and reports to be adopted in the state of Michigan.

## Instructional Research

*Curriculum Building.*—Seven articles, 51 pages, were devoted to curriculum building. Vogel, Jaycox, and Washburne at-

[12] Willard, Dudley W., and Williams, Curtis T. "A Criterion of the Quality of Teaching." *Educational Administration and Supervision*, 9:147-59, March, 1923.

[13] Bushnell, Paul P. "A Method of Teacher Comparison." *Educational Administration and Supervision*, 9:416-22, October, 1922.

[14] Swift, F. H., Graves, Richard, and Tiegs, E. W. *Studies in Public School Finance in the East.* Minneapolis, Minnesota, University of Minnesota. (Research Publication of the University of Minnesota, No. 2.)

[15] Bain, L. C. "Measuring the Current Expenditures of the Cleveland Public Schools." (Unpublished)

[16] Fowlkes, John Guy. "The Accounting of Public School Expenditures in Wisconsin." (Unpublished)

tempted to determine a basic list of phonics for grades I and II by the frequency with which the different elements appeared in an analysis of the words in ten primers and first-readers.[17] So far as the writer is aware this is the first attempt to determine such a word list scientifically, although since its appearance Osborn of the State Department of Wisconsin, in a mimeographed bulletin,[18] and Dewey in one of the Harvard studies in education[19] have presented similar investigations. Other articles listed under curriculum building included a word count in the readers for grade III, a scientifically selected spelling vocabulary, the determination of the number of pages in the curriculum referring to Japanese-American relationships, and the like; but since the methods used in these studies are fairly well known no further comment will be given them. Mention should also be made of such curricular studies as, "The Social Studies in the Elementary and Secondary Schools,"[20] the *Curriculum in Biology*,[21] the report of the committee on the reorganization of secondary-school mathematics,[22] and Moore's *Minimum Course of Study*.[23]

*Evaluation of Curricula.*—Several of the studies listed under this topic center around the Latin investigation fathered by the American Classical League, but directed by numerous investigators throughout the country. As a result of this investigation Thorndike reported that students studying Latin during a

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[17] Vogel, Mable, Jaycox, E., and Washburne, C. W. "A Basic List of Phonics for Grades I and II." *Elementary School Journal*, 23:436-52, February, 1923.

[18] Osborn, W. J. "The Relative Value of Letter Sounds and Phonograms." Mimeographed bulletin, Madison, Wis., State Department of Public Instruction.

[19] Dewey, Godfrey. *Relative Frequency of English Speech Sounds*. Cambridge, Massachusetts, Harvard University (Harvard Studies in Education, No. IV.)

[20] Whipple, G. M., editor. "The Social Studies in the Elementary and Secondary School." Bloomington, Illinois, Public School Publishing Company. In *Twenty-Second Yearbook of The National Society for the Study of Education*, Part II. 1923. 343 pp.

[21] Finley, Charles W., and Caldwell, Otis W. *Biology in the Public Press*. New York, Lincoln School, Teachers College, 1923. 151 pp.

[22] National Committee on Mathematical Requirements. *The Reorganization of Mathematics in Secondary Education*. Oberlin, Ohio, Mathematical Association of America, 1923. 652 pp.

[23] Moore, Ernest C., editor. *Reports of Committee on Minimum Essentials in Elementary Education*. New York, Macmillan Company, 1922. 402 pp.

year gain about one and one-half times as much in range of English vocabulary as the non-Latin students[24] and similarly that the Latin students gain about one and one-half times as much in ability to read English paragraphs.[25] Thorndike and Ruger discovered that the study of Latin in grade IX resulted in a significant improvement in defining Latin derivatives, but no improvement in defining non-Latin derivatives.[26] Gilliland's results corroborated the findings of Thorndike and Ruger for his Latin students showed greater knowledge of Latin derivatives than his non-Latin students. He also discovered that the study of German and French did not influence the knowledge of Latin derivatives.[27] Kirby presented figures showing little correlation between the number of years of Latin taken and the grade received in French, and suggested from his facts that little can be claimed for Latin as a preparation for French.[28] Miller and Briggs after examining more than 300 translations of a prepared passage in Cicero declared that the study of Latin is detrimental rather than helpful in the mastery of accurate and effective English.[29] All of the foregoing conclusions were accompanied by the caution that the conclusions reached pertained to Latin taught in rather loosely controlled conditions and that the readers should not put too much faith in them. All of the studies, however, represent attempts to evaluate certain aspects of the Latin curriculum. It is hoped that in the future other curricular subjects may also be subjected to an exacting scrutiny.

Eikenberry's investigation on the "Permanency of High-School Learning" in which he gave a number of the standardized

[24] Thorndike, E. L. "The Influence of First-Year Latin Upon Range in English Vocabulary." *School and Society*, 17:82-84, January 20, 1923.

[25] Thorndike, E. L. "The Influence of First-Year Latin Upon the Ability to Read English." *School and Society*, 17:165-68, February 10, 1923.

[26] Thorndike, E. L., and Ruger, G. J. "The Effect of First-Year Latin upon the Knowledge of English Derivatives." *School and Society*, 18:260-70, September 1, 1923.

[27] Gilliland, A. R. "The Effect of the Study of Latin on the Ability to Define Words." *Journal of Educational Psychology*, 4:174-76, March, 1923.

[28] Kirby, T. J. "Latin as a Preparation for French." *School and Society*, 18:563-69, November 10, 1923.

[29] Miller, Geo., and Briggs, T. H. "Effect of Latin Translation on English." *School Review*, 21:756-62, December, 1923.

tests covering the subject matter of the high-school course of study to the seniors in two colleges in New Jersey should not be overlooked. When he discovered the small amount of knowledge retained, he exclaimed, "If not one college senior out of a group of 15, 16, or 17 can remember who was president during the Mexican War, or give the approximate date of the Hegira, or define an erg, an ampere, an ohm, or a watt, and if only one, two, or three can state the historical significance of the Church Council of Nicea, or the Peloponnesian War, or can name two substances used in the making of hydrogen, or give the velocity of light or sound, we may very well question the desirability of teaching in each subject the great mass of facts which we ordinarily teach."[30] This investigation is but a beginning of a most worth-while series of investigations which are necessary for a proper evaluation of our numerous curricula.

*Evaluation of Instructional Methods.*—Miss Smith of Detroit describes a carefully controlled experiment in which the experimental group used practice materials based upon purposive reading, while the control group used ordinary material and methods of instruction. The experimental group with its emphasis on purpose, self-helpfulness, and individual progress read as much in one semester as the control group read in two semesters.[31] The practice material utilized in this experiment should be given careful consideration by primary teachers. If it proves as effective in other systems as in Detroit, methods of teaching reading will surely be revolutionized. Gates and Taylor tested the merits of teaching writing to pre-school children by having them trace letters or copy the letters immediately. The latter method yielded superior results. While the experiment was not carried on for an extended period of time the conclusions, if corroborated by later studies, will have a marked influence on the

[30] Eikenberry, D. H. "Permanency of High-School Learning." *Journal of Educational Psychology*, 14:463-77, November, 1923.

[31] Smith, Nila. "An Experiment to Determine the Effectiveness of Practice Tests in Teaching Beginning Reading." *Journal of Educational Research*, 7:213-28, March, 1923.

introduction of writing in the primary grades.[32] The method by which children learn words was investigated. One of the important conclusions reached is that children attack words in a manner quite different from that used by the adult.[33] The last two investigations emphasize the need of experimental studies on how children learn the different school tasks with which they are confronted.

Time will not permit discussion of the findings of further studies in instructional research, but mention should be made of Osborn's[34] and Knight's[35] reports on drill in arithmetic, Hutson's article and monograph on the training of teachers,[36] Phelps' study of the four-year curricula in state teachers' colleges,[37] Thorndike and Robinson's study on the diversity of high-school students' programs,[38] and of Sangren's,[39] Scott and Myer's,[40] and Geiger's[41] studies on the analysis of errors in children's responses to certain educational situations.

This report on instructional research would not be complete without mention of Gray's *Remedial Cases in Reading*,

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[32] Gates, Arthur I., and Taylor, Grace A. "The Acquisition of Motor Control in the Writing of Pre-School Children." *Teachers College Record*, 14:459-88, November, 1923.

[33] Gates, Arthur I., and Boeker, Eloise. "A Study in the Initial Stages in Reading by Pre-School Children." *Teachers College Record*, 14:469-88, November, 1923.

[34] Osborn, W. J. "A Study of the Validity of the Courtis and Studebaker Practice Tests in the Fundamentals of Arithmetic." *Journal of Educational Research*, 8:93-112, September, 1923.

[35] Knight, F. B. "Drill in Arithmetic." *Journal of Educational Psychology*, 14:115-21, February, 1923.

[36] Hutson, P. W. "High-School Science Teachers. A Study of Their Training in Relation to the Subjects They Are Teaching." *Educational Administration and Supervision*, 9:423-38, October, 1923.

[37] Phelps, Shelton. "The Four-year Curriculum in State Teachers Colleges." *Educational Administration and Supervision*, 10:345-56, September, 1923.

[38] Thorndike, E. L., and Robinson, Eleanor. "The Diversity of High-School Pupils' Programs." *Teachers College Record*, 14:111-21, March, 1923.

[39] Sangren, Paul V. "The Woody-McCall Mixed Fundamentals Test and Arithmetical Diagnosis." *Elementary School Journal*, 14:206-15, November, 1923.

[40] Scott, Flora, and Myers, Garry C. "Children's Empty and Erroneous Concepts of the Commonplace." *Journal of Educational Research*, 8:327-34, November, 1923.

[41] Geiger, Ruth. "A Study in Reading Diagnosis." *Journal of Educational Research*, 8:283-300, November, 1923.

*Their Diagnosis and Treatment*,[42] Ayer's study on "The Curriculum,"[43] Courtis and Caldwell's comparison of the achievement in Boston in 1845 and in Detroit in 1920,[44] and of Osborn's studies in the analysis of children's errors in reading, spelling, and arithmetic.[45]

### Research Involving Educational and Mental Tests

*Educational Tests.*—During the year several new tests have appeared. Geyer has developed an objective examination on intelligence testing[46] and Briggs has perfected a series of tests for giving training in the use of the dictionary.[47] While his tests are somewhat different from the ordinary standard tests, they are singularly important since by taking the tests the children learn proper habits of work. Odell described an "omnibus test" for the upper grades of the elementary schools including geography, elementary science, grammar, and certain phases of arithmetic.[48] Thorndike and Symonds developed and standardized several forms of a new test of English vocabulary.[49] These tests are based upon the 10,000 most commonly used words in the English language and as many as fifty different tests of equal difficulty are ultimately promised. Cooley and Reeves have developed some informational tests in home economics which prom-

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[42] Gray, W. S. *Remedial Cases in Reading: Their Diagnosis and Treatment.* Chicago, University of Chicago, 1923. 208 pp. (Supplementary Educational Monographs, No. 22.)

[43] Ayer, F. C. "The Curriculum." Mimeographed Study, Bureau of Research, Seattle Public Schools.

[44] Caldwell, O. W., and Courtis, S. A. *Then and Now in Education.* Yonkers, World Book Company, 1924. 400 pp.

[45] Osborn, W. J. "Analysis of Errors." Mimeographed bulletins, State Department of Education, Madison, Wisconsin.

[46] Geyer, Denton L. "A Uniform Objective Examination on Intelligence Testing." *Journal of Educational Psychology*, 14:372-75, September, 1923.

[47] Briggs, T. H. "A Dictionary Test." *Teachers College Record*, 14: 355-65, September, 1923.

[48] Odell, C. W. "An Omnibus Achievement Test for the Upper Elementary School." *Elementary School Journal*, 23:353-58, January, 1923.

[49] Thorndike, E. L., and Symonds, P. M. "Difficulty, Reliability, and Grade Achievements of English Vocabulary." *Teachers College Record*, 14:438-44, November, 1923.

ise to be most vital factors in standardizing the work of this subject throughout the United States.[50]

Georgina Strickland Gates developed a measuring device for determining growth in social perception through passing judgment on the facial expressions. The significance of this test does not lie in the results thus far discovered, but in its later possibilities as an instrument in character analysis.[51] Simpson described some informal tests by means of which he attempted to measure the influence of instruction in logical thinking.[52] Tests and experimentation of this type promise great possibilities in the future. Trabue described a test for measuring judgment of orchestral music and furnished evidence which suggests that the time is near at hand, when musical appreciation may be measured.[53] The writer's reading test based on the ability to pick out the central thought from paragraphs read may be included among the new tests which have appeared during the current year. Several other new tests have been developed but no description of them has appeared in magazines.

One of the promising tendencies manifested by the new tests is the attack on higher mental processes, for, in the past, tests have placed too much emphasis on the mechanical abilities and on the types of activities representing lower levels of achievement. The development of tests and practice exercises for measuring and bringing about improvement in these higher types of achievement is a rich field for future research.

*Mental Tests.*—As indicated in the summary almost one-fourth of the articles and pages appearing during the current year dealt with certain aspects of mental tests. These articles

[50] Cooley, Anna M., and Reeves, Grace. "Some Investigations Concerning the Use of Certain Home Economics Information Tests." *Teachers College Record*, 24:374-92, September, 1923.

[51] Gates, Georgina Strickland. "An Experimental Study of the Growth of Social Perception." *Journal of Educational Psychology*, 14:449-61, November, 1923.

[52] Simpson, Benjamin R. "Training in the Technique of Thinking as a Means of Clearer Thinking." *School and Society*, 18:358-60, September 22, 1923.

[53] Trabue, M. R. "Scales for Measuring Orchestral Music." *Journal of Educational Psychology*, 14:545-61, December, 1923.

were diverse in character and did not lend themselves to easy classification for 13 of the articles are placed under the caption *Unclassified articles.*

Three articles classified under *Constancy of the I.Q.* dealt with the intelligence quotients of mentally retarded children. Henmon and Burns tested 72 children in the Madison public schools having intelligence quotients between 60 and 80 and found that the fluctuation from the original intelligence quotients on a retest at an interval of from one to four years was from negative 6 to positive 3 points, with an average difference of 5.3 points.[54] The evidence given in this article showed that the intelligence quotients of the border-line cases tend to decrease. Berry in his investigation of mentally retarded children in Detroit showed that the intelligence quotients of pupils whose original intelligence quotients were from 60 to 69 tended to remain constant, while those between 70 and 89 tended to decrease.[55] His conclusions regarding the border-line cases agreed with the findings of Henmon and Burns. Anderson[56] presented evidence to show that the intelligence quotient varies in individual cases; cited different types of intelligence-growth curves; and stated that in cases where the intelligence quotient is below 50 there is a tendency for the median intelligence quotient to remain constant and that in all cases between 50 and 80 the median intelligence quotient at any age shows a decrease. She stated that no group of cases showed a marked increase. Thus the findings of these three investigations are in close agreement.

An article by Thorndike, classified under the head of the constancy of the intelligence quotient, is somewhat remotely related to the subject but seems worthy of mention. In his investigation he reported that the amount of mental growth during

[54] Henmon, V. A. C., and Burns, Helen M. "The Constancy of Intelligence Quotients with Border-line and Problem Cases." *Journal of Educational Psychology*, 14:247-50, April, 1923.

[55] Berry, Chas. S. "The Intelligence Quotients of Mentally Retarded School Children." *School and Society*, 18:723-29, June 30, 1923.

[56] Anderson, Meta. "A Study of the Data of the Results Gathered from Repeated Mental Examination of Two Hundred Defective Children." *Journal of Applied Psychology*, 7:54-64, March, 1923.

each year of the high school is equivalent to about ten months of mental age.[57] This gain according to Thorndike is considerable. The discovery is significant, since it indicates that mental growth continues throughout the high-school period and does not stop at the age of 14 or thereabouts.

*Effectiveness of Classification.*—A number of articles appeared during the past year which discussed the effectiveness of classification based upon mental-test scores or some other basis of supposed merit. In most of the experiments, however, the conditions were not closely controlled and the results are not conclusive. Such carefully controlled experiments as that of Burtt, Chassell, and Hatch suggest that the time is coming when there will be a more scientific evaluation of the results of differentiation on the basis of mental tests.[58] The conclusions reached in this experiment imply that the big problem lies not in differentiation itself, but in the adjustments of the curriculum and classroom practices after differentiation has taken place. Controlled experiments are making this point doubly clear. In too many of the investigations reported the evaluations of the effectiveness of differentiations are based on comparisons of the distributions of grades made by bright and dull sections or upon the teachers' registered opinions that the bright sections showed more initiative than the dull sections. The real problem is, "Does differentiation on mental levels provide conditions whereby each pupil and the group make greater improvement than can be obtained in existing conditions or can the same improvement thereby be obtained with less effort than under existing conditions?"

*Mental Tests and Vocational Guidance.*—From the articles read it is evident that mental tests are being utilized more extensively as a means of guidance. The Army Alpha tests were

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[57] Thorndike, E. L. "On the Improvement in Intelligence Scores from 14 to 18." *Journal of Educational Psychology.* 14:513-16. December, 1923.

[58] Burtt, Harold E., Chassell, Laura M., and Hatch, Elizabeth M. "Efficiency of Instruction in Unselected Sections of Elementary Psychology Compared with That in Sections Selected on the Basis of Intelligence Tests." *Journal of Educational Psychology,* 14:154-61. March, 1923.

used to advantage by Miner in selecting Rhodes Scholars.[59] Weisman reported evidence to justify the use of the Stanford Revision as a guide in selecting courses in the Spokane high school.[60] Feingold made an investigation of the intelligence scores of the high-school pupils in the Hartford public schools and decided that only about 46 percent of the pupils were making vocational choices that could be realized.[61] Proctor and Ward who report a most interesting study on the persistence of educational and vocational plans of high-school pupils found that four years after the vocational ambitions had been indicated, 40 percent of the students were in those occupations or in occupations of as high or higher rank.[62] A definite tendency for those pupils making high scores on the mental tests to attain the vocational ranks of their choices was shown, while those who made lower scores tended to gravitate to occupational ranks below those of their expressed choices. These studies are sufficient to show the tendency for a greater and more varied use of mental tests in vocational and educational guidance.

*Testing Different Races.*—One of the most significant articles on racial comparison is by Thorndike, in which he presents the results of the Thorndike Test for Rational Thinking, Generalization, and Organization to large numbers of negro and white students in the high schools of the North Central Association in May, 1922, and in May, 1923. On the basis of the average of the two tests only 4 percent of the colored students surpassed the median of the white for the corresponding grades. On the retest, the Whites gained 23.5 points; the Negroes, 13.5 points. This showed a rather marked superiority for the white

[59] Miner, J. B. "Tests of Candidates for the Rhodes Scholarships." *School and Society*, 18:297-300, September 8, 1923.

[60] Weisman, Sara. "Use of the Stanford Revision on the Binet-Simon Test as a Guide in the Selection of High-School Courses." *Journal of Educational Research*, 7:137-44. February, 1923.

[61] Feingold, Gustave. "The Relation Between Intelligence and the Vocational Choices of High-School Pupils." *Journal of Applied Psychology*, 7:143-53. June, 1923.

[62] Proctor, W. M., and Ward, Helen. "Relation of General Intelligence to the Persistence of Educational and Vocational Plans of High-School Pupils." *Journal of Educational Research*, 7:277-88. April, 1923.

race.[63] Pintner in comparing the American, Italian, Polish, and German children in New York City found that on the basis of the National Intelligence Test only 36 percent of the Italians, 41 percent of the Polish, and 36 percent of the German exceeded the median age of the American groups.[64] On the Pintner Non-Language test, he found a great deal of variation from these percents and issued a warning about drawing conclusions on results from intelligence tests based largely on language, especially when such tests were given to foreigners. Sheldon found on the basis of the Cole-Vincent test that the Mexican children in his school in New Mexico had about 85 percent of the intelligence of the white child.[65] Other articles attempting to determine racial differences by means of the Downey Will-Temperament Test or instruments for analyzing social traits, and still others attempting to determine the achievement of Chinese or Filipino children have appeared, but no real contributions were contained therein. These studies do, however, indicate considerable interest in these phases of race psychology and give promise of future contributions.

## Research in Statistical Methods

*First Aids in Statistical Methods.*—During the year several attempts have been made to develop "first aids" in the interpretation and use of statistical methods. Thorndike apologized for what he termed a simple explanation of the construction and interpretation of correlation tables,[66] but emphasized the need for certain corrections which are often overlooked. Holzinger developed several formulae for correcting various types

[63] Thorndike, E. L. "Intelligence Scores of Colored Pupils in High Schools." *School and Society*, 18:569-70. November 10, 1923.

[64] Pintner, Rudolph. "Comparison of American and Foreign Children on Intelligence Tests." *Journal of Educational Psychology*, 14:292-95. May, 1923.

[65] Sheldon, Wm. H. "The Intelligence of Mexican Children." *School and Society*, 19:139-42. February 2, 1924.

[66] Thorndike, E. L. "Construction and Interpretation of Correlation Tables." *Journal of Educational Research*, 7:199-212. March, 1923.

of errors in mental measurement.[67] Toops and Miner developed a P.E. table which facilitates computation and is thus a great time-saver.[68] Otis contributed a correlation chart which he believes offers improvements in simplicity and ease of calculation.[69] Surely the lay-reader welcomes these first aids.

*Prediction.*—Thirteen articles, 112 pages, have been devoted during the past year to prediction. Hull[70] and Huffaker[71] were interested in improving the statistical technique involved in prediction. Others have attempted to develop formulae which may be used in predicting success in school work, in teaching, in agricultural engineering, or in typewriting. Most of these authors were interested in prediction as a statistical problem.

Burtt and Ives found a correlation of 0.60 between the scores obtained on seven tests by students of agriculture at Ohio State University and the average estimate of success by three instructors of these students.[72] Tuttle found a correlation of 0.62 between four tests and the term grades in typewriting.[73] The authors in both these investigations felt that their tests were sufficiently accurate to predict success in these fields. May, in trying to see how accurately the marks of 450 freshmen in the College of Liberal Arts at Syracuse could be predicted, found a correlation of 0.60 between the honor points gained and the combined scores on the Miller Intelligence Test and the Dartmouth Completion Definition Test.[74] When by means of partial cor-

[67] Holzinger, Karl J. "An Analysis of Errors in Mental Measurement." *Journal of Educational Psychology*, 14:278-88. May, 1923.

[68] Toops, H. A., Miner, Zaida. "A Serviceable P. E. Table." *Journal of Educational Research*, 9:63-68. January, 1924.

[69] Otis, A. S. "The Otis Correlation Chart." *Journal of Educational Research*, 8:440-48. December, 1923.

[70] Hull, Clark L. "Prediction Formulae for Teams of Aptitude Tests." *Journal of Applied Psychology*, 7:277-84. September, 1923.

[71] Huffaker, O. L. "A Contribution to the Technique of Partial Correlations." *Journal of Applied Psychology*, 6:135-42. June, 1923.

[72] Burtt, H. E., and Ives, F. H. "Vocational Tests for Agricultural Engineers." *Journal of Applied Psychology*, 7:178-87. June, 1923.

[73] Tuttle, W. W. "The Determination of Ability for Learning Typewriting." *Journal of Educational Psychology*, 14:177-81. March, 1923.

[74] May, Mark A. "Predicting Success." *Journal of Educational Psychology*, 14:429-40. October, 1923.

relations the hours of study per week were held constant the correlation between honor points and intelligence rose to 0.80. His suggestion, that if one knew the intelligence rating of a student one could predict the necessary hours for him to study to achieve success, was unique. He urged the necessity of having an industry rating along with an intelligence rating, however, if the prediction was to prove reliable.

Jones[75] and Whitney[76] both indicated that success in teaching may be predicted, but the formulae which they used were so different and the same items had such different weights that, to the writer, their studies suggest the need for much further investigation. Gates and LaSalle found that the accuracy of prediction by means of the Stanford Revision was as great for a period of 20 months as for shorter periods, but that accuracy of prediction based upon the National Intelligence Tests became less and less as the period of intervening time became greater. These authors found a positive correlation between the gains revealed through the giving of the National Intelligence Tests at the beginning and end of a twenty months' period and the gains accruing through the giving of achievement tests at four intervals during that period; and they suggested that the intelligence test reflects the training given in the subjects taught. They found that the best test for predicting success in a particular field is an achievement test in that field.[77] Vaughn found that the best criterion for predicting success in college physics is the grade in college algebra or other courses of college physics, but even with these criteria his coefficients only averaged between 0.65 and 0.70.[78] Enough studies have been cited to show

[75] Jones, Edward S. "The Prediction of Teaching Success for College Students." *School and Society*, 18:685-90. December 8, 1923.

[76] Whitney, Frederick L. "Prediction of Teaching Success." *Journal of Educational Research*, 7:421-28. May, 1923.

[77] Gates, A. I., and LaSalle, Jessie. "Relative Predictive Values of Certain Intelligence and Educational Tests Together with a Study of the Effect of Educational Achievement Upon Intelligence Test Scores." *Journal of Educational Psychology*, 14:517-539. December, 1923.

[78] Vaughn, James. "The Comparative Value of Certain Measures for Predicting Grades in College Physics." *School and Society*, 18:28-30. July 7, 1923.

the general tendencies manifest on the topic of prediction and to indicate the necessity for more investigation before much credence can be given the findings.

*Reliability and Validity of Test Results.*—The past year has been a period of evaluating the claims made by test makers and their findings, and a period of refining technique. Mention will be made of a few of the significant studies to show the scope of the work undertaken and the methods employed. Chapman,[79] Gates,[80] Toops and Symonds,[81] Wallin,[82] and Ruch,[83] all made investigations of the reliability of the accomplishment-quotient and intelligence-quotient techniques and found that accomplishment quotients as ordinarily obtained and the intelligence quotients obtained from group tests are very unreliable. They all questioned the use of these ratios until the reliability of the original measures was thoroughly established. Such findings should cool the ardor of those who are unhesitatingly making use of these ratios.

Ruch and Koerth[84] investigated the influence of the speed factors in the reliability of the Army Alpha and found that speed as a fact has little influence.[85]

Ruch and DelManzo,[86] and Meier[87] investigated the reliabil-

[79] Chapman, J. Crosby. "The Unreliability of the Difference Between Intelligence and Educational Tests." *Journal of Educational Psychology*, 14:103-108, February, 1923.

[80] Gates, Arthur I. "The Unreliability of M. A. and I. Q. Based upon Group Tests of General Ability." *Journal of Applied Psychology*, 7:93-100, March, 1923.

[81] Toops, H. A., and Symonds, P. W. "What Shall We Expect of the A. Q." *Journal of Educational Psychology*, 13:512-28 and 14:27-38, December, 1922, and January, 1923.

[82] Wallin, J. E. W. "The Consistence Shown by Intelligence Ratings Based on Standard Tests and Teachers' Estimates." *Journal of Educational Psychology*, 14:231-45, April, 1923.

[83] Ruch, G. M. "The Achievement Quotient Technique." *Journal of Educational Psychology*, 14:334-43, September, 1923.

[84] Ruch, G. M., and Koerth, Whilmine. "Power vs. Speed in the Army Alpha." *Journal of Educational Psychology*, 14:193-208, April, 1923.

[85] Ruch, G. M. "The Speed Factor in Mental Measurements." *Journal of Educational Research*, 9:39-45, January, 1924.

[86] Ruch, G. M., and DelManzo, M. P. "The Downey Will-Temperament Test. A Further Analysis of its Reliability and Validity." *Journal of Applied Psychology*, 7:65-73, March, 1923.

[87] Meier, Normal C. "A Study of the Downey Test by the Method of Estimates." *Journal of Educational Psychology*, 14:385-95, October, 1923.

ity of the Downey Will-Temperament Test and found that in its present state it is so unreliable that its use is questioned.

Numerous studies were made on the correlation of a number of intelligence tests or the correlation of intelligence tests with educational tests or with class grades. Other studies were on such topics as "the relation of the ability to learn and intelligence as measured by tests,"[88] "improvement of teachers' estimates of intelligence,"[89] "the influence of certain exercises in silent reading on the results of the Otis Group Intelligence Test,"[90] "the validation of reasoning tests in arithmetic,"[91] and "the limitations of educational tests."[92] These investigations all show that the past year has been one of rather critical analysis and their findings suggest that a mere beginning has been made.

*Standardization of Measurement Technique.*—During the past year has come a plea for some kind of standardized technique in measurement. Nygaard set forth the advantages of the probable error of measurement as the only measure of reliability and implied that its reliability and ease of calculation will warrant universal usage.[93]

McCall, the originator of the T-score terminology and an advocate of a uniform method of scale construction, has given us a description of the application of his theory in some of his measurement work in China.[94] This leads to the belief that he is still an advocate of using the T-score as the proper unit in

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[88] Johnson, O. J. "A Study of the Relation Between Ability to Learn and Intelligence as Measured by Tests." *Journal of Educational Psychology*, 14:540-42, December, 1923.

[89] Buchanan, W. D. "Improvement in Teachers' Estimates of Intelligence." *Elementary School Journal*, 23:542-46, 1923.

[90] White, Wendell. "The Influence of Certain Exercises in Silent Reading on the Otis Group Intelligence Scale." *Elementary School Journal*, 23:783-86, 1923.

[91] Hunkins, R. V., and Breed, F. X. "The Validation of Arithmetic Reasoning Tests." *Elementary School Journal*, 18:453-66, 1923.

[92] Henmon, V. A. C. "Some Limitations of Educational Tests." *Journal of Educational Research*, 7:185-98, 1923.

[93] Nygaard, P. H. "The Advantage of the Probable Error as a Criterion of the Reliability of a Test or Scale." *Journal of Educational Psychology*, 14:407-13, October, 1923.

[94] McCall, W. A. "Science in Education." *Journal of Educational Research*, 7:384-96, 1923.

scale construction. Will in his articles proposed that kental scores be used instead of T-scores and argued that through reducing all mental and educational scores to kental units they would be comparable.[95]

If the theory underlying his proposal is sound, he has provided us with a formula which makes very easy the transmutation of all scores into comparable units. Goodrich argued that test scores should be put into comparable units, but suggested the reduction of all scores to units of a year's work in a given grade.[96] The great advantage of his suggestion is the proposal that scores be expressed in terms which the lay mind can understand. The T-scores or kental scores are satisfactory from the standpoint of the technical worker, but they are Greek to the layman and arouse his suspicion. The writer believes in standardized technique, but of a kind which will not bewilder those who want to use it by its lack of meaning or difficulty of computation.

*Miscellaneous Comment.*—Without citing references and without elaboration it seems well to state that statistical research during the year has about established two other facts: (1) that in scoring the yes-and-no types of examinations, taking the number of exercises right is the most satisfactory method of scoring, and (2) that in the scoring of standardized tests it is not necessary to weight the value of the different elements in the tests.

## Research in Experimental Studies

Only seven articles are listed under this caption. The small number may be due to the arbitrary and artificial classification, but it is probably due to the fact that within the last few years there has been a tendency to leave the laboratory and to experiment with children in the schoolroom. Five of the articles deal

[95] Will, Harry S. "Proposals for Standardizing Measurement in Education. The Variability Unit." *Journal of Educational Research*, 8:414-21, December, 1923.

[96] Goodrich, T. V. "Putting Test Scores into Form to Facilitate Comparison." *Journal of Educational Research*, 8:377-88, 1923.

with certain aspects of reading. Blackhurst, experimenting upon the optimum length of line in reading for grades I to IV, inclusive, found that 90 mm. was most efficient in these grades.[97] He also found in another experiment that most efficient results were obtained with 4 mm. leading in grade I and with a gradual reduction to 1.33 mm. leading for all grades above the second.[98] Gilliland, experimenting as to the effect on reading of changes in size of type, found that good readers with normal eyesight were retarded by type as large as 36 point or as small as 6 point. He reported a slight decrease in the number of fixations with very small type and a slight increase in the number of fixations with very large type. He reported the interesting fact that children are not as much affected as adults by changes in size of type.[99] Burtt and Basch, experimenting on the legibility of various faces of type, found that the Cheltenham was more legible for both the capital and small letters.[100] Gray described an investigation which showed that anticipation of meaning is an important factor in reading ability and urged that in the teaching of reading consideration should be given to the development of those habits which give delicate and subtle controls over the marginal impressions.[101] These investigations deal with aspects of reading upon which many experiments have been made. They are important as checks upon the older investigations.

*Brief Discussion of Articles Under Other Captions.*—Without taking time to comment on other specific articles listed under the captions, *Descriptive Articles, Testing Surveys,* and *Unclassified Articles,* it should be said that they range from the description of a revised intelligence test with its accompanying

[97] Blackhurst, J. Herbert. "Length of Line as Related to Readability in the First Four Grades." *School and Society,* 18:328-30, September 15, 1923.

[98] Blackhurst, J. Herbert. "Leading as Related to Readability in the First Four Grades." *School and Society,* 17:363-64, March 31, 1923.

[99] Gilliland, A. R. "The Effect on Reading of Changes in the Size of Type." *Elementary School Journal,* 24:138-46, October, 1923.

[100] Burtt, Harold E., and Basch, Coryne. "Legibility of Bodoni, Baskerville Roman, and Cheltenham Type Faces." *Journal of Applied Psychology,* 7:237-45, September, 1923.

[101] Gray, C. T. "Anticipation of Meaning as a Factor in Reading Ability." *Elementary School Journal,* 23:614-26, April, 1923.

standards to investigations setting forth the status of mental testing in colleges and universities. It seems that mental tests have been applied in some form or other to almost every aspect of human behavior. The mention of a few titles is suggestive of the scope,—"Influence of Mental Level in the Formation of Boys' Gangs," "An Interpretation of the Lay Attitude Towards Intelligence Tests," "Social Rating of Best and Poorest High-School Students," "Leadership in Relation to Intelligence," "An Attempt to Determine Another Etiological Factor of Stuttering Through Objective Measurement," "Intelligence and Literature," "Freshman Tests in a Small College," "Intelligence and Persistence in High School," and "Experiments with Mental Alertness Tests." The difficulty with a great mass of these studies lies in the fact that they represent mere beginnings in the field. They are suggestive but in no way conclusive. What wonderful progress could be made if a large number of research workers could concentrate on one aspect of a problem and continue working until some definite conclusions were established!

The two articles listed as investigations on attitudes seem to the writer to be especially important. The first by Knight and Remmers indicated that learning under strong motivation is at least twice as effective as learning with lesser motivation. He indicated that the attitude or motive was the driving force.[102] The second experiment by Gates and Rissland on "The Effect of Encouragement and Discouragement Upon Performance," indicated that individuals respond differently to praise or censure.[103] The particular importance of these two articles does not lie so much in the conclusions reached as in the fact that they indicate the possibility of studying attitudes objectively. Herein lies a most important work for future investigators.

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[102] Knight, E. B., and Remmers, H. H. "Fluctuation in Mental Production When Motivation is the Main Variable." *Journal of Applied Psychology*, 7:209-23, September, 1923.

[103] Gates, Georgina Strickland, and Rissland, Louise Q. "The Effect of Encouragement and Discouragement Upon Performance." *Journal of Educational Psychology*, 14:21-26, January, 1923.

## Conclusion

To attempt to summarize this paper is futile but a few suggestions with regard to future research do not seem out of place.

We can look forward to a higher level of research work. The collection of facts by routine methods, the mere giving of educational or mental tests, the more or less random calculating of central tendencies or of correlation coefficients will be recognized as research of low order. In the future, facts will be collected and tests will be given as aids in the solution of real problems.

We can also look forward to the use of a better working technique. Our instruments of measurement have provided a better means of evaluation. Statistical method has developed so that a better control over masses of data is possible. The necessity of control groups and proper experimental conditions is becoming more evident to all.

During the next year continued emphasis will be upon the reliability and validity of results obtained. In the past, coefficients of reliability and of variability have been computed in a loose way; and comparisons have been without regard to the comparability of data. The time, however, has come when these calculations must be made under better controlled conditions.

During the next year the possibilities of the prediction technique will be further developed and emphasis will be placed upon the so-called higher mental functions, such as thinking ability, attitudes, and appreciations.

At this point it does not seem out of place to suggest the writer's belief that there should be more coordination of the efforts of the research workers. Much progress could be made if the members of this organization would concentrate their efforts upon a program of research. If those of us who are interested in administrative research or instructional research or research of whatever type would concentrate upon one problem and pool our results great progress would result. Let us hope that such a step may be taken in the near future.

# THE CONCENTRIC METHOD OF STUDY AND TEACHING

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Professor James said many years ago that "we learn to skate in the summer and we learn to swim in the winter." He also said that "there should be no impression without correlative expression." We have here an illustration of the happy facility of expression which was always so characteristic of James when he wished to impress some fundamental principle.

Expression must follow impression indeed, but the expression which follows is at first very incoordinate and uncertain. It usually requires many painstaking impressions before we get an efficient expression. The work and toil centers in the impression. *The temporal distribution of effort is undoubtedly the most essential principle which concerns the whole process of impression.* A less picturesque, but more recent and technical way, of saying that we learn to swim in the winter and learn to skate in the summer is this: "Distributed effort or repetition is more efficient and economical than accumulated effort or repetition."

There is certainly no more essential or important factor in study, and in either motor or ideational learning than the distribution of time and effort. It is not my purpose here to recount the experimental work of Ebbinghaus, Jost, Seashore, Starch, and others in this field. The results of their experiments are familiar to all students of educational psychology and of education. It is rather my purpose to point out the fact that we have very largely failed to make the practical application of Jost's law.

Jost's law may be stated as follows: "If two associations are of equal strength but of different age, a new repetition is more efficacious for the old than for the new." In other words, we may say that a given amount of effort is more valuable, and will accomplish more when we are working with materials with

which we are somewhat familiar. On the other hand, it is a great waste of energy to be dealing with new materials all the time. Much effort is consumed in the slow wearing away of the feeling of unfamiliarity and strangeness before any real comprehension is possible.

In distributed effort there is time for the assimilation of new materials. Nothing that is new can be adequately apperceived or its real meaning and significance gained in any other way. Meaning is wholly relative. What anything means depends upon its relation to something else. The span of consciousness at any moment is very narrow and the focus of consciousness is in reality at any given moment only a single point. For any thought to be completely associated in all its aspects with any other thought or to be interwoven into a system of thought in a completely assimilated and correlated way, successive and distributed effort with adequate intervening time intervals are required.

When we think of anything at a given moment we bring it into relation to only a segment of the total stream of consciousness, and hence we gain only a fragmentary and partial comprehension of it. What we need to do is to tap many segments of the stream of consciousness. We need a successive series of associations. These may afterwards be grouped into a constellation of interassociations with a final juxtaposition of all the elements which will give a compact, uniform, organized whole.

An experiment which I have tried with my classes re-inforces this idea more than any number of words can do. I asked them to take some thought or object such as the Statue of Liberty in New York Harbor, and to bring it just for a moment into the focus of consciousness for seven successive days, and to record its meaning at each moment. The results are rather remarkable. More aspects and viewpoints, more meanings and interpretations, will be gained in seven minutes distributed in this way than in a half hour or more of thought all at one time. Upon the successive days seven very different kinds and groups of ideas were brought into association with the object or thought in question.

A genius is a genius because of his broad wealth of related interassociated ideas. He can see a great deal in a simple object because it takes on manifold significance and meaning by being brought into contact with a broad span of consciousness. With most of us our span of consciousness is too narrow to permit an object to gain great wealth of meaning at any one moment. However, if our consciousness is not broad at any one moment it is ever flowing and ever changing. Our surest way to approach the grasp of things which is so instantaneous to a great mind is to tap the different segments of our stream of consciousness and by distributed effort gain a breadth of meaning which otherwise could be gained only by the very superior mind.

One student in my classes, by bringing the image of the Statue of Liberty in New York Harbor into relation with the thoughts present in mind for a single moment only on several successive days, saw in this liberty memorial the following significant meanings. "*First day.* Torch of light, attracting the attention of the world, a new empire. America the torch of the world—both a challenge and a hope. *Second day.* Liberty, a nation conceived in liberty and dedicated to the proposition that all men are created equal. The freeing of the individual from his fetters of caste and from the close-encircling walls which obscure vision and dampen aspiration. Liberty, the liberalization of individual opportunity—a vision ever working out to wider and wider horizons. *Third day.* Freedom. Declaration of Independence. The rights of man versus the divine rights of kings. The frontiersman versus the frivolity of the courts of Louis XIV and James I. *Fourth day.* Peace. Federal union *versus* the destructive rivalry of many states. *E pluribus unum*—and in oneness peace. Abraham Lincoln, the personification of union. The unprotected Canadian frontier.

The above illustrates the wealth of meaning which can be seen in four seconds more or less. I have obtained similar results with other objects of thought handled in a distributive way. I suggest the following for experimentation: Hawthorn's Great Stone Face, the Coliseum, the Golden Gate of San Francisco,

the Washington Monument, Michael Angelo's statue of David or of Moses, or some abstract thought such as patriotism, home, friendship, or life,

But let us return to Jost's Law. "If two associations are of equal strength but of different age, a new repetition is more efficacious for the old than for the new."

If we obey this law in teaching it seems to me that we ought in some way to give a broad, inclusive introduction of one or two weeks in each subject taught. If that were done the student would not be confronted so much every day with new material. Of course such an introduction to be of any value would have to be a kind of rapid-fire, heavy-pressure presentation of scores of the fundamental principles of the subject. A well-chosen, concise, concrete illustration of each principle would need to be given so that it could be apperceived and understood. Day by day throughout the course these principles should be taken up one by one and studied in detail, but the strangeness and unfamiliarity would be very largely worn away, and the student's effort would be put on old material. Returning to the problem would afford an opportunity to tap a new group of ideas or a new segment of the stream of consciousness; and new meanings would thus be gained.

An effort could also be made to keep the fundamental aspects of the subject in mind throughout the entire course. Thus they could all become interassociated and all be brought into juxtaposition and unity. Such a method would give what I have called for want of a better name the concentric method of recitation.

How disappointing it is to ask a student, who has worked faithfully day by day in the detail of a course of study, for a characterization of the essential aspects of an interrelated group of ideas and to find an utter failure on his part to see the things as a whole or to get the larger and more inclusive meanings from the details. Is not the instructor largely to blame? Is not the average class recitation a successive, day-by-day attack upon details in piece-meal fashion, with the student at a loss to

know what he is to do, or what ideas are significant, or what the subject all means as a whole?

I tried out an experiment in six sections of the introductory course in psychology this year in the Junior College of Kansas City. I followed throughout the course what I have called the concentric method of recitation, I asked for a written opinion from all students after making it clear that I had tried the method as an experiment and that I wanted their statements as to the value of the method. I have scores of statements of the most enthusiastic approval. A majority state that they had never really known how to study before so as to get the larger significance of the details of the subject. Objective testing showed an improvement of at least 20 percent; but I think the real gains were in methods of study, and these may well be a permanent acquisition.

I spent the first four days on a general introduction to the course covering such data as psychology and its relations to other sciences, the general divisions of psychology such as individual, differential, collective, genetic, comparative, and abnormal. A general introduction was also given to the most important of the teleological divisions, such as applied psychology in medicine, law, business, industry, and teaching. This was followed by a presentation of the methods of approach or methods of study in psychology, such as experiments, introspection, and observation, together with the insight to be gained from the abnormal and genetic aspects of psychology.

To avoid bewilderment due to such a concentrated presentation, I gave concrete illustrations of each principle. I also gave a general introduction to the most important workers and authors in the different divisions with a specific characterization of some thirty important books in the different divisions of psychology. These books were placed upon a reserve shelf so that all students could easily make their first acquaintance with them. They were not of the more difficult, concentrated type of textbook but were the more readable, more easily comprehended books dealing with separate divisions of psychology, such

as Münsterberg's *Psychology and Crime* and his *Psychotherapy*, Jastrow's *Fact and Fable*, and Seashore's *Psychology and Daily Life*.

In the second week under the general topic of "How to study with some applications to the psychology of life," I gave a general overview of many of the most important aspects of psychology. The five days devoted to this served as a more specific introduction to many of the important principles of how to study. While "How to study" was the focal point emphasized, I tried to make the presentation considerably broader than the strict meaning of this term would imply.

A brief analysis of the five days' lectures follows.

## FUNDAMENTALS OF STUDY

I. Adjustment
  A. Attitude
    1. Attitude towards life
    2. Attitude towards mistakes and failures
    3. Scientific study of attitudes
    4. Attitude towards study
  B. Project—*Aufgabe*
    1. The inertia of mind
    2. The usual dimness and vagueness of perception
    3. The failure of formal discipline shows the need of a broader project
  C. Tapping of original tendencies—the adjustment of one's energy to study and to life's work
II. Attention and Apperception
  A. Attention processes
    1. Laws of attention
    2. Contemplation
    3. Concentration
  B. Apperceptive processes
    1. Apperception as mental assimulation
    2. Apperception as the meaning aspect of experience
    3. Temporal distribution as a factor in apperception
III. Visualization, Perception and Imagination
  A. The perception process
  B. Imagination
    1. Types of imagination
    2. Gains through imagination
      a. Books and symbols become real and living
      b. All experience becomes our own

c. All ages are crowded into our own age
d. All quarters of the world become our environment

IV. Analysis and Abstraction
A. The abstraction process
1. Seek the elements in any situation
2. Sense organs aid in the abstraction process
3. Thinking is impossible without the elements gained through analysis
B. The value of elements and concepts in thought
1. Compare elements in chemistry
2. Analysis the basis of the higher thought processes —creative imagination, discrimination, judgment, etc.
C. Evaluation
1. Discrimination between the essential and the non-essential
2. The economy of evaluated thought
3. Evaluated thinking and rhythm
D. Analysis and logical thought
1. Analysis the basis of logical memory
2. The gains through logical recall —ease of recall, more permanent retention, and grasp of meaning and significance of the things recalled

V. Association, Correlation, and Synthesis
A. Types of association
1. An idea with an idea
2. An idea with a movement
3. An idea with percept
4. A percept with a movement
5. A feeling tone or emotion with an idea, percept, or movement, etc.
B. Association the basis of memory and recall
1. All accessible knowledge is interwoven into a constellation of associations.
2. Unconscious memory is not subject to active recall because it consists in unassociated impressions.
C. Correlation or interassociation
1. Interassociation and meaning
2. All meaning is relative.
D. Juxtaposition; simultaneous association
1. Juxtaposition gives easy, ready correlation and association.
2. The multiple page presentation of a subject in a book makes correlation difficult. Compare the ease of comprehending a landscape as a whole to the difficulty of grasping a book as a whole.
E. Unity. Significance of the whole
1. The whole is more than the sum of its parts.

The significant thing is the relation of the parts to each other.

2. The relation of the parts seen only in the whole

The lectures based upon this outline not only served as an introduction to many of the most important general principles of psychology, but they also met the very general and pressing need of students of psychology at the very outset to acquire correct and efficient methods of study.

While I was giving these introductory lectures, all students were required to read through very rapidly—at least in paragraph reading—the entire text of Woodworth's *Psychology, a Study of Mental Life*. I chose this text in part because it is simple and clear. Many who read it through felt that they gained a fair comprehension of the subject at the first reading. Whether they did or not, the essential thing was that the subject as a whole was no longer entirely new and that thereafter all their effort was spent upon old instead of upon new material.

The two weeks' work, therefore, served as a basis for a concentric method of recitation—a method which seems to me to take full advantage of Jost's law, and to gain the results which follow from distributed effort. It also helped to a very great extent to overcome one of the pronounced weaknesses in our educational system—the lack of systematic training in how to study. Moreover, it gave this help at the very first of the term so that it would be a decided factor of advantage throughout the entire course.

After thorough trial I have adopted the method in all the classes of the psychology department, and I recommend it to anyone who is anxious to get the large, important aspects of a subject more fully into the mind of the average student.

# THE STATUS OF CERTAIN BASIC LATIN SKILLS[1]

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## INTRODUCTION

One part of the Classical Investigation which is being carried on in the country is a study by means of objective tests of the status of certain of the basic skills in Latin. In May and June, 1922, a large number of tests was sent out to schools which had volunteered to take part in the investigation. Careful directions were sent out with the tests. They were given and scored by the teachers in the various schools and the results together with the test papers were sent to Minneapolis, Minnesota, where they were checked, rescored where necessary, and tabulated by a volunteer committee of Latin teachers.

This report is based upon the total number of test papers received by January 1, 1923. These were as follows:

| | |
|---|---|
| Henmon Vocabulary and Sentence Test | 7,358 |
| Godsey Diagnostic Latin Composition Test (Sentences and Rules) | 7,959 |
| Pressey Test in Latin Syntax (Nouns, Pronouns, and Adjectives) | 5,871 |
| Tyler-Pressey Test in Latin Verb-Forms | 5,109 |
| Total | 26,297 |

[1] The investigation reported here deals with one phase of the general investigation being conducted by the American Classical League with the financial support of the General Education Board, and was made possible by the cooperation of the principals and teachers of many schools. The work was planned by the Special Investigating Committee of the League consisting of Andrew F. West, *Chairman*, W. L. Carr, Mason D. Gray, and W. V. McDuffee, with the assistance of Leo J. Brueckner of the University of Minnesota, Miss Marie B. Deneen of the University of Minnesota, and Dorrance S. White of the Central High School, Minneapolis. Dr. Brueckner is responsible for the general methods of treating the results and for their presentation in this article. Later articles will discuss the results of the second test given in the spring of 1923, will analyze the progress made by individual pupils during the year elapsing between the two tests, and will describe the results of further studies in correlating the results of the Latin tests discussed in this article with the results of the Ullman-Kirby Latin Comprehension Test. The results secured with the Ullman-Kirby test are being analyzed by Dr. B. L. Ullman, and will be reported in a separate article. The committee also plans to correlate the results of the Latin tests with the results of the English tests given in the same schools. Copies of the tests described in this article may be secured for two cents each from The Service Bureau of The American Classical League, Teachers College, Columbia University, New York City.

All states are represented except Florida, Louisiana, Nevada, New Mexico, North Carolina, and Mississippi.[2] The results, therefore, give a survey of such proportions as to be a fairly reliable indication of the work of the country as a whole.

## The Tests Used

The Henmon Vocabulary and Sentence Test was devised by V. A. C. Henmon of the College of Education, University of Wisconsin. The vocabulary consists of fifty words, each of which has a graded scale value. The score employed in this report consists of the number of words correctly defined. The sentences are ten in number and are given with scale values. When this sentence test was analyzed by the Minneapolis committee, it was found that the teachers who had originally scored the papers had been so free in their interpretation of certain phrases that a complete rescoring was necessary. It was also observed that the last half of the test operated quite as much to the discredit of pupils of the third and fourth years as of the second, because of the unit-credit method of scoring used. By this method only complete sentences correctly translated are counted. It was decided, for these two reasons, to rescore the entire set of 7,358 papers on the basis of the number of thought-units correct as well as upon the basis of the number of complete sentences correct. That is, if, as in the case of the fourth sentence of Form I, *"Urbs, quae eo tempore non munita est, facile capta est,"* a pupil translated correctly all of the seven thought-units except the fourth, *non*, he was given credit for six units correct instead of being scored zero on the entire sentence. The entire set of ten sentences was divided up into forty-seven thought-units. Each pupil was graded on the actual number of thought-units that he translated correctly. At the same time account was kept of the total number of complete sentences correct. The summary sheets sent back to the schools reported the two records.

[2] Special state surveys are being conducted in Mississippi, Iowa, and Michigan.

The Godsey Diagnostic Latin Composition Test is composed of two parts: (1) thirty-three English sentences each followed by the Latin equivalent, one construction of which is repeated in four expressions, only one of which is correct; and (2) a set of rules for each sentence from which the pupil is to select the one applying to the form chosen as correct. The pupil is asked in each case to draw a circle around the form which he chooses as correct, and then around the number of the rule which he thinks explains the form chosen as correct; for example, Sentence I-a reads:

The king's sons are leaders of the enemy.
Rēgis (fīlius, fīliōrum, fīliōs, fīlī) ducēs hostium sunt.
Rule 4. Possession may be expressed by the genitive.
Rule 7. The direct object is in the accusative.
Rule 13. The subject of a finite verb is in the nominative.
Rule 14. Action thought of as going on in the past is denoted by the imperfect.

The Pressey Test in Latin Syntax was devised by L. C. Pressey of the Department of Psychology, Ohio State University. It is of the multiple-choice type, and consists of thirty-three English sentences, each of which is translated into four different Latin sentences only one of which is correct. For example, Sentence 8 reads:

I saw him in the city.

| | |
|---|---|
| Eum in urbī vīdī. | Eum urbe vīdī. |
| Eum in urbem vīdī. | Eum in urbe vīdī. |

The student is required to underscore the Latin sentence which he considers correct.

The Tyler-Pressey Test in Latin Verb Forms was constructed by Caroline Tyler and S. L. Pressey of the Department of Psychology, Ohio State University. It is of the multiple-choice type, and consists of thirty-two Latin verb forms, each of which is translated into four English verb phrases, only one of which is correct. The first form may illustrate the scheme:

1. Movēmus

We shall move. Let us move. We are moved. We are moving.

## Distributions for Each Test

The final standards shown in Table I are based upon a consolidation of the scores of the pupils according to the number of semesters of training in Latin. As the tests were given in May and June, the standards may be considered those for the end of each semester. This report is based upon a study of the results of the spring tests that had been received up to the end of the calendar year 1922.

TABLE I. STANDARD SCORES FOR EACH TEST BASED ON MEDIAN SCORES

| Test Used | Number of Semesters of Latin Studied | | | | | | | | Total Possible Score |
|---|---|---|---|---|---|---|---|---|---|
| | 1* | 2 | 3* | 4 | 5* | 6 | 7* | 8 | |
| Henmon Vocabulary | 22.7 | 34.8 | 39.9 | 42.0 | 45.0 | 45.5 | 45.8 | 46.3 | 50 |
| Henmon Sentences | | | | | | | | | |
| (1) Unit credit | 1.5 | 2.8 | 3.6 | 4.2 | 4.8 | 4.8 | 5.3 | 5.2 | 10 |
| (2) Partial credit | 9.0 | 20.6 | 28.4 | 31.7 | 35.2 | 35.3 | 37.5 | 37.0 | 47 |
| Godsey | | | | | | | | | |
| Sentences | 7.8 | 14.2 | 15.8 | 18.7 | 21.3 | 24.6 | 24.0 | 26.3 | 33 |
| Rules | 9.4 | 18.3 | 21.3 | 23.8 | 26.2 | 28.6 | 28.4 | 30.1 | 33 |
| Pressey Syntax Test | 15.3 | 15.9 | 16.1 | 19.6 | 20.0 | 22.7 | 25.9 | 25.4 | 33 |
| Tyler-Pressey Verb Forms | 13.7 | 17.5 | 19.8 | 19.2 | 22.0 | 23.8 | 26.6 | 25.2 | 32 |

* Due to the smaller number of cases involved the median scores for the first, third, fifth, and seventh semesters are less reliable than those for the second, fourth, sixth, and eighth semesters.

The following tables present in order the distributions for the tests used; each distribution is given according to the number of semesters of Latin the pupils had had. All the tables are to be read in the same fashion. Table II shows that there were 41 pupils who had had one semester of training in Latin. Two of them scored between 4 and 8, 2 scored between 8 and 12, and so on. The *Median* was 22.7. One-fourth of the pupils scored lower than the *Lower Quartile* of 14.4, and one-fourth scored more than the *Upper Quartile* of 31.2. Similar data are given for each semester of training. By $Q$ is meant one-half the difference between the two quartiles or, in other words, the semi-interquartile range; for example, $Q$ for the first semester group is

found by finding half the difference between 14.4 and 31.2, or 8.4. The smaller the $Q$, the more homogeneous the group; e.g., a $Q$ of 2.0 in the seventh-semester group means that this group is more homogeneous than the first-semester group with a $Q$ of 8.4.

There are certain general trends observable in all these tables. In the first place, there is a decided rise during the first three to five semesters, depending upon the test, and a slower rise from then on. In the case of the Henmon tests there is an explanation to be found in the tests themselves, because neither test gives the pupils in the upper semesters a good chance to show their superiority. An additional test of words and sentences ranging higher in the scale of difficulty and covering a larger vocabulary would more adequately measure the development in the upper years. In the case of the sentence test there appear idiomatic phrases that distinctly hinder pupils in their translation. This would tend to keep down the scores. The upper years appear to much better advantage, when the partial-credit method of scoring is used, since the pupil who does not know a particular idiom but is able to translate the remainder of the sentence is not penalized for his inability to recognize one difficult construction.

Attention is called to the fact that on the unit-credit basis the median of 4.8 for the fifth semester out of a possible total of ten sentences correct is less than 50 percent of the maximum, while on the partial-credit basis a median score of 35.2 for the same pupils out of a total of 47 is practically 75 percent of the maximum. On the partial-credit basis, therefore, a higher level of development is measured than on the unit-credit basis. The inherent limitations of the test prevent adequate measurement of progress beyond the fifth semester even on the partial-credit basis of scoring.

A longer test with a greater range of ease and difficulty is apparently needed. The present test proved too difficult for many of the pupils, for some of them were unable to translate a single sentence correctly. Experiments conducted in Minneapolis on a Latin test of a wider range and with fewer com-

TABLE II. DISTRIBUTION OF HENMON VOCABULARY SCORES

| Score | Number of Semesters of Latin Studied | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 48–50 | | 35 | 13 | 204 | 24 | 165 | 9 | 81 |
| 44–47 | | 254 | 82 | 656 | 94 | 352 | 27 | 121 |
| 40–43 | 2 | 478 | 145 | 669 | 37 | 184 | 11 | 40 |
| 36–39 | 4 | 624 | 127 | 400 | 17 | 48 | 1 | 18 |
| 32–35 | 3 | 616 | 69 | 229 | 11 | 10 | 1 | 6 |
| 28–31 | 5 | 511 | 31 | 117 | 4 | 9 | | |
| 24–27 | 5 | 296 | 11 | 65 | | 1 | | |
| 20–23 | 3 | 185 | 8 | 30 | 2 | | | |
| 16–19 | 5 | 84 | 1 | 14 | | | | |
| 12–15 | 10 | 50 | 1 | 3 | | | | |
| 8–11 | 2 | 15 | | 1 | | | | |
| 4–7 | 2 | 4 | | | | | | |
| 0–3 | | 5 | | | | | | |
| Total Number of Pupils | 41 | 3,157 | 488 | 2,388 | 189 | 769 | 49 | 266 |
| Medians | 22.7 | 34.8 | 39.9 | 42.0 | 45.0 | 45.5 | 45.8 | 46.3 |
| Lower Quartile | 14.4 | 29.2 | 36.0 | 37.4 | 41.4 | 42.7 | 43.6 | 44.1 |
| Upper Quartile | 31.2 | 39.9 | 43.3 | 45.6 | 47.0 | 47.7 | 47.6 | 48.7 |
| Q | 8.4 | 5.4 | 3.6 | 4.2 | 2.8 | 2.5 | 2.0 | 2.3 |

TABLE III. DISTRIBUTION OF HENMON SENTENCE TEST SCORES
(Scored on Unit-Credit Basis)

| Scores (Sentences Correct) | Number of Semesters of Latin Studied | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 10 | | | | 3 | 1 | 1 | | 1 |
| 9 | | | | 10 | 2 | 8 | 2 | 5 |
| 8 | | 4 | 5 | 33 | 8 | 22 | 3 | 16 |
| 7 | | 14 | 8 | 112 | 14 | 45 | 1 | 23 |
| 6 | | 61 | 19 | 245 | 25 | 103 | 9 | 37 |
| 5 | 1 | 169 | 58 | 419 | 33 | 169 | 13 | 64 |
| 4 | 4 | 369 | 106 | 490 | 47 | 180 | 8 | 63 |
| 3 | 3 | 743 | 135 | 485 | 38 | 148 | 9 | 31 |
| 2 | 9 | 1,197 | 114 | 380 | 16 | 77 | 4 | 20 |
| 1 | 6 | 474 | 32 | 154 | 5 | 13 | | 4 |
| 0 | 18 | 126 | 11 | 57 | | 3 | | 2 |
| Total Number of Pupils | 41 | 3,157 | 488 | 2,388 | 189 | 769 | 49 | 266 |
| Medians | 1.5 | 2.8 | 3.6 | 4.2 | 4.8 | 4.8 | 5.3 | 5.2 |
| Lower Quartile | 0.6 | 2.2 | 2.7 | 3.0 | 3.7 | 3.6 | 2.9 | 4.1 |
| Upper Quartile | 2.8 | 3.8 | 4.7 | 5.5 | 6.1 | 5.9 | 6.3 | 6.4 |
| Q | 1.1 | .8 | 1.0 | 1.3 | 1.2 | 1.1 | 1.2 | 1.2 |

TABLE IV. DISTRIBUTION OF HENMON SENTENCE TEST SCORES
(Scored on a Partial-Credit Basis)

| Score (Thought-Units Correct) | Number of Semesters of Latin Studied | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 44–47 | | 2 | 4 | 44 | 12 | 40 | 4 | 33 |
| 40–43 | | 30 | 19 | 204 | 32 | 138 | 7 | 56 |
| 36–39 | | 87 | 34 | 364 | 41 | 177 | 21 | 59 |
| 32–35 | 3 | 191 | 96 | 544 | 46 | 171 | 7 | 55 |
| 28–31 | 3 | 356 | 102 | 467 | 22 | 127 | 8 | 30 |
| 24–27 | 2 | 473 | 87 | 294 | 16 | 73 | 1 | 17 |
| 20–23 | 1 | 520 | 68 | 200 | 11 | 33 | 1 | 12 |
| 16–19 | 4 | 466 | 39 | 111 | 5 | 4 | | 2 |
| 12–15 | 4 | 412 | 19 | 87 | 1 | 5 | | |
| 8–11 | 4 | 396 | 17 | 47 | 2 | 1 | | |
| 4–7 | 14 | 183 | 3 | 19 | 1 | | | |
| 0–3 | 6 | 41 | | 7 | | | | 2 |
| Total Number of Pupils | 41 | 3,157 | 488 | 2,388 | 189 | 769 | 49 | 266 |
| Medians | 9.0 | 20.6 | 28.4 | 31.7 | 35.2 | 35.3 | 37.5 | 37.0 |
| Lower Quartile | 5.1 | 13.6 | 22.6 | 25.7 | 30.0 | 30.4 | 33.1 | 32.3 |
| Upper Quartile | 19.0 | 26.9 | 33.3 | 36.2 | 39.7 | 39.7 | 39.8 | 41.6 |
| Q | 7.1 | 6.7 | 5.4 | 5.2 | 4.9 | 4.7 | 3.3 | 4.7 |

TABLE V. DISTRIBUTION OF GODSEY DIAGNOSTIC LATIN COMPOSITION SCORES
(Sentences)

| Score | Number of Semesters of Latin Studied | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 33 | | | 1 | 19 | | 34 | | 21 |
| 30–32 | | 19 | 6 | 133 | 16 | 146 | 12 | 95 |
| 27–29 | | 74 | 23 | 247 | 43 | 154 | 9 | 103 |
| 24–26 | 1 | 140 | 29 | 334 | 31 | 159 | 10 | 76 |
| 21–23 | | 215 | 46 | 383 | 36 | 141 | 7 | 72 |
| 18–20 | | 323 | 75 | 406 | 43 | 119 | 9 | 40 |
| 15–17 | 2 | 459 | 103 | 408 | 23 | 80 | 6 | 29 |
| 12–14 | 7 | 615 | 85 | 374 | 29 | 48 | 2 | 24 |
| 9–11 | 7 | 518 | 85 | 327 | 16 | 36 | 5 | 10 |
| 6–8 | 5 | 323 | 41 | 168 | 8 | 4 | 1 | 6 |
| 3–5 | 12 | 103 | 19 | 47 | 2 | 1 | 1 | 1 |
| 0–2 | 4 | 12 | 2 | 10 | | 1 | | |
| Total Number of Pupils | 38 | 2,801 | 515 | 2,856 | 247 | 923 | 62 | 477 |
| Medians | 7.8 | 14.2 | 15.8 | 18.7 | 21.3 | 24.6 | 24.0 | 26.3 |
| Lower Quartile | 4.5 | 10.5 | 11.4 | 13.3 | 15.9 | 19.5 | 18.3 | 21.4 |
| Upper Quartile | 12.4 | 18.7 | 20.0 | 24.2 | 26.7 | 29.0 | 29.0 | 29.9 |
| Q | 4.0 | 4.1 | 4.3 | 5.4 | 5.4 | 4.8 | 5.3 | 4.8 |

TABLE VI. DISTRIBUTION OF GODSEY LATIN COMPOSITION TEST SCORES
(Rules)

| Score | Number of Semesters of Latin Studied | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 33 | | 8 | 4 | 88 | 9 | 85 | 7 | 12 |
| 30–32 | | 117 | 32 | 398 | 52 | 287 | 18 | 169 |
| 27–29 | | 183 | 46 | 446 | 50 | 188 | 11 | 95 |
| 24–26 | | 289 | 79 | 454 | 44 | 145 | 7 | 73 |
| 21–23 | 2 | 368 | 105 | 412 | 32 | 102 | 7 | 27 |
| 18–20 | 1 | 476 | 76 | 355 | 27 | 55 | 3 | 18 |
| 15–17 | 6 | 443 | 87 | 282 | 22 | 31 | 3 | 12 |
| 12–14 | 4 | 456 | 51 | 221 | 7 | 22 | 2 | 5 |
| 9–11 | 7 | 300 | 24 | 126 | 3 | 3 | 4 | 2 |
| 6–8 | 9 | 119 | 8 | 37 | 1 | 4 | | 2 |
| 3–5 | 8 | 34 | | 7 | | | | 1 |
| 0–2 | 1 | 8 | 3 | 10 | | 1 | | 1 |
| Total Number of Pupils | 38 | 2,801 | 515 | 2,836 | 247 | 923 | 62 | 477 |
| Medians | 9.4 | 18.3 | 21.3 | 23.8 | 26.2 | 28.6 | 28.4 | 30.1 |
| Lower Quartile | 6.3 | 13.6 | 16.5 | 18.3 | 21.2 | 24.3 | 22.7 | 26.1 |
| Upper Quartile | 15.0 | 23.1 | 25.2 | 28.6 | 29.9 | 31.5 | 31.7 | 32.2 |
| Q | 4.4 | 4.8 | 4.4 | 5.2 | 4.4 | 4.6 | 4.5 | 3.0 |

TABLE VII. DISTRIBUTION OF PRESSEY SYNTAX SCORES

| Score | Number of Semesters of Latin Studied | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 33 | | 1 | 2 | 7 | 1 | 12 | 2 | 9 |
| 30–32 | | 19 | 7 | 111 | 20 | 93 | 9 | 73 |
| 27–29 | | 70 | 13 | 193 | 16 | 129 | 15 | 79 |
| 24–26 | 6 | 147 | 34 | 269 | 33 | 132 | 11 | 74 |
| 21–23 | 9 | 213 | 47 | 310 | 28 | 126 | 10 | 56 |
| 18–20 | 11 | 241 | 61 | 322 | 34 | 125 | 6 | 49 |
| 15–17 | 11 | 289 | 64 | 309 | 32 | 93 | 5 | 39 |
| 12–14 | 10 | 279 | 68 | 251 | 26 | 80 | 3 | 9 |
| 9–11 | 17 | 297 | 69 | 185 | 23 | 34 | | 10 |
| 6–8 | 8 | 182 | 33 | 95 | 3 | 17 | | 3 |
| 3–5 | 1 | 36 | 13 | 23 | 4 | 2 | | |
| 0–2 | | 2 | | 2 | | | | 1 |
| Total Number of Pupils | 73 | 1,776 | 411 | 2,077 | 220 | 843 | 61 | 402 |
| Medians | 15.3 | 15.9 | 16.1 | 19.6 | 19.9 | 22.7 | 25.9 | 25.4 |
| Lower Quartile | 10.6 | 11.3 | 11.5 | 11.6 | 14.9 | 17.5 | 21.3 | 20.4 |
| Upper Quartile | 20.2 | 21.1 | 21.0 | 24.7 | 25.4 | 27.5 | 29.2 | 29.3 |
| Q | 4.8 | 4.9 | 4.8 | 6.6 | 5.2 | 5.0 | 4.0 | 4.5 |

TABLE VIII. DISTRIBUTION OF TYLER-PRESSEY VERB-FORM SCORES

| Score | Number of Semesters of Latin Studied | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 30–32 | | 35 | 18 | 64 | 16 | 68 | 14 | 66 |
| 27–29 | | 112 | 27 | 131 | 25 | 92 | 7 | 46 |
| 24–26 | 3 | 163 | 46 | 206 | 27 | 92 | 8 | 52 |
| 21–23 | 5 | 280 | 72 | 275 | 25 | 93 | 6 | 51 |
| 18–20 | 4 | 310 | 68 | 331 | 29 | 76 | 4 | 35 |
| 15–17 | 3 | 325 | 65 | 282 | 21 | 45 | 4 | 24 |
| 12–14 | 7 | 315 | 31 | 223 | 17 | 28 | 1 | 4 |
| 9–11 | 7 | 231 | 37 | 179 | 7 | 14 | | 3 |
| 6–8 | 7 | 112 | 15 | 64 | 2 | 7 | | 4 |
| 3–5 | 1 | 24 | 2 | 7 | 1 | 1 | | 1 |
| 0–2 | | 5 | | | | | | |
| Total Number of Pupils | 37 | 1,912 | 381 | 1,763 | 170 | 516 | 44 | 286 |
| Medians | 13.7 | 17.5 | 19.8 | 19.2 | 21.9 | 23.8 | 26.6 | 25.2 |
| Lower Quartile | 9.4 | 13.0 | 15.5 | 14.6 | 17.3 | 19.3 | 22.0 | 21.1 |
| Upper Quartile | 20.3 | 22.2 | 23.8 | 23.6 | 26.9 | 28.0 | 30.7 | 29.7 |
| Q | 5.5 | 4.6 | 4.2 | 4.5 | 4.8 | 4.4 | 4.4 | 4.3 |

plicated and idiomatic constructions showed a steady increase in the ability to translate with each succeeding term.

There is clear evidence, also, that the Henmon vocabulary test is not wide enough in its range to measure adequately the development of the pupil's vocabulary above the fifth semester. There is no increase in score above this point, because the limit of fifty words has been reached or almost reached by a majority of the pupils. A test of 100 words ranging higher in the scale of difficulty and covering a larger vocabulary would more adequately measure this development. Almost one-half of the vocabulary measured by this test is the product of the first semester's training, as can be seen by the median score of 22.7 out of a possible 50, while four-fifths is the product of three semesters of Latin.

The rapid rise at first and the lack of improvement later on may be due to the structure of the tests used, to the nature of the material on which the children were tested, or to a defect in the teaching in these later years. The weight of evidence seems to point, however, to the nature of the tests used as the true

explanation. The Godsey test shows a more consistent, though smaller, rise than the other tests.

In the second place, a significant fact common to all the tables is the great overlapping from one semester to another. In general, the second semester shows the widest range of scores, and there is usually a closer grouping—shown by the smaller Q—from then on. But in all cases the overlapping is enormous. For almost every table there are pupils in the first-semester group who surpass the score of the lowest in the fourth- or fifth-semester group. In Table VI, which shows the Godsey composition scores (rules), there are in the second, third, fourth, and eighth semesters pupils who range in ability from those unable to select a single rule correctly to those who make the correct choice in every case. This is clear evidence of a wide variation in the emphasis which teachers place upon the learning of rules. In the case of the Pressey syntax test, there is an unusual amount of overlapping, due to the wide variation of scores for all semesters. The variation in the eighth semester is as wide as that in the second. In this test there appear scores all the way from 6 to 33 in each group from the second to the eighth, with the single exception of the seventh. The wide variation of scores is even more evident in the Tyler-Pressey Test in Verb Forms. The explanation for this fact may again lie in the different amount of emphasis placed upon knowledge of forms by different teachers. Evidently some teachers have been very successful during the earlier semesters in developing the ability measured by this test.

These two facts, a rapid rise followed by a failure to gain and an exceedingly wide variation with consequent overlapping from semester to semester, stand out in every table of the series. It is not within the province of this paper to offer explanations, but it should be pointed out that the situation calls for careful thought and analysis.

## Correlation Between Tests

In order to determine the correlation between the abilities measured by the tests a special study was made of 80 second-

semester pupils and of a similar group of fourth-semester pupils in the schools of a city in the Middle West who had taken the five tests described in this report. The scores for each test were correlated with scores for the other five tests. The second-semester group of pupils showed a wide variation in the abilities concerned, although the group as a whole was considerably above standard, especially on the Godsey and Pressey tests.

Table IX shows the correlation (Pearson product-moment) of tests with test for the two groups mentioned. The table shows that the coefficients of correlation vary from +0.85 to —0.09. There is a high degree of correlation between any given test and each of the others used in the survey except for the Godsey rules. For the two-semester group the small negative correlations between the Godsey rules and the Henmon vocabulary test and the Henmon sentence test (unit-credit) show a slight inverse relation between the abilities measured by the Godsey rules

TABLE IX. INTERCORRELATION OF TEST SCORES FOR TWO-SEMESTER AND FOUR-SEMESTER PUPILS

| | Henmon Vocabulary | | Henmon Sentence Unit Credit | | Henmon Sentence Partial Credit | | Pressey | | Tyler-Pressey | | Godsey Rules | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Semesters | | Semesters | | Semesters | | Semesters | | Semesters | | Semesters | |
| | Two | Four | Two | Four | Two | Four | Two | Four | Two | Four | Two | Four |
| Henmon Sentence Unit-Credit | .65 | .38 | | | | | | | | | | |
| Henmon Sentence Partial-Credit | .43 | .38 | .69 | .71 | | | | | | | | |
| Pressey | .60 | .64 | .31 | .16 | .25 | .40 | | | | | | |
| Tyler-Pressey | .56 | .44 | .42 | .44 | .46 | .30 | .42 | .68 | | | | |
| Godsey Rules | —.03 | .46 | —.09 | .53 | .18 | .44 | .60 | .75 | .50 | .56 | | |
| Godsey Sentence | .60 | .57 | .58 | .51 | .62 | .33 | .46 | .85 | .77 | .76 | .62 | .69 |

and by these two tests. Such low correlations as these indicate that for these pupils, measured by these tests, there is found no relation between their knowledge of rules and their knowledge of vocabulary or ability to translate. These low relationships are contradicted, however, by the results from the fourth-semester

pupils. The high positive correlation between the scores on the Godsey sentences and the Henmon tests indicates a close relationship between the ability to recognize the correct Latin form and a knowledge of vocabulary or ability to translate. The differences in the coefficients of correlation indicate, no doubt, that the various tests measure different phases of Latin and that these are developed to a varying degree in pupils, depending partly upon the emphasis given by the teacher. The interesting fact, brought out by this table, is that in the case of second-semester pupils the ability to translate correlates negatively with the knowledge which a pupil may have of the rules of syntax. The Pressey syntax test also has a relatively low degree of correlation with the ability to translate as measured by the Henmon test. The Godsey sentence test has the highest average correlation with all the other tests and has a correlation of 0.62 with the Godsey rules. There is a high correlation between the Pressey syntax and the Godsey rules. Evidently the ability to score well on the Pressey test depends upon a knowledge of the rules underlying Latin syntax.

This study may well raise the question of the value of spending in the first year's work an excessive amount of time upon rules and technical phases of the study of Latin. The ability of these two-semester pupils to translate Latin apparently is not to a measurable degree dependent upon an accurate knowledge of rules.

## General Conclusions

A number of significant facts based on the results of the tests are shown regarding the status of Latin at the present time. Any interpretation of these results must take into consideration the defects in certain of the tests already pointed out in the introduction. This is particularly true of the Henmon Vocabulary and Sentence Tests, which apparently do not beyond the fourth semester measure the extent of the development of the Latin vocabulary or the ability to translate from the Latin. The following conclusions, however, are clear:

1. There is a great variation in the scores of pupils on all tests for each semester's training. This is indicated by the wide range between the scores of individuals.
2. The vocabulary measured by the Henmon test is chiefly the product of the first four semesters of training. A test for higher levels should be developed.
3. There is little increase in the ability to translate sentences into English above the fifth semester, as measured by the Henmon sentence test, whether the translations are scored on the unit-credit or partial-credit basis. This may be due to the method of scoring or to the fact that the test has inherent weaknesses.
4. The ability measured by the Godsey sentence test shows a steady increase from the second to the eighth semester.
5. The ability to apply rules, measured by the second element in the Godsey test, shows a steady increase from semester to semester, through the eighth semester.
6. The results of the Pressey syntax test indicate that in the ability measured the largest growth is made during the first semester and that there is a relatively small average increase after this semester.
7. The results of the Tyler-Pressey Test in Latin Verb-Forms show that the largest growth in the ability measured is made during the first semester, and that there is a relatively small average increase after this semester.
8. There is a clear need of establishing standards of achievement for each semester's training. The great range in abilities and the amount of overlapping make this clear.
9. There are some pupils who apparently do not profit directly from the training received. This is evident from the fact that on each test there were pupils in second- and third-semester classes who showed little or no results from the training received.

# EDUCATIONAL TESTS FOR RETARDED SCHOOL CHILDREN

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During recent years standardized educational measurements have become largely decentralized, passing from the controlling hands of school surveyors of graduate departments of education into the hands of the teacher. In this latter position they are used to diagnose actual instructional ills and point the remedial measures. The logic of the measuring movement demands exactly this migration downward. Furthermore, the ultimate success of the movement depends primarily upon the degree to which the teacher actually employs the data of measurement in improving the teaching act.

Although educational zeal has led the sweeping cohorts of research into nearly every nook and crannie of the educational field, relatively little attention has been given to the question, Do standardized educational tests show, under experiment, that they present values when applied to retarded children in the public school? The case for measurements has long since been made with superior and normal children. This paper is an experimental evaluation of certain educational tests as applied to the retardates.

## Purpose and Plan of Investigation

Teachers and supervisors of special classes of retarded pupils need, theoretically, to have impersonal testimony regarding both a pupil's educational attainments—his abilities and his intelligence—his capacity. Exact achievement scores may help the special-class teacher keep in mind the normal standards of achievement for each grade. This is no small task when the special-class teacher has children from several grades in her fluctuating group. Test scores prevent the teacher from com-

pletely giving way to the tendency to emphasize effort rather than achievement. They provide the supervisor a standard by which the teacher's judgment can be verified as supplementary to the psychological examinations; and they give the principal a convincing argument when urging upon parents or the regular teacher the transfer of a pupil to the ungraded class. Test scores also show to what extent students in ungraded classes have uneven and special disabilities, whether correlation of abilities or disabilities exists, and whether time and effort are being misdirected in attempting to train children of certain mental levels. This paper hopes to contribute something of value to teachers and supervisors of backward, negatively atypical, and seriously retarded children in their efforts to reinstate these pupils in the grade, to record intelligently the progress made from year to year, to classify the individuals within the group, and so to direct training effort that the fullest possible returns in pupil achievement may be secured.

## The Children Tested

All children in the special and ungraded classes of Rochester were included in this study which was made in 1918. Special classes are composed of children placed there upon the recommendation of the principal and the grade teacher because of inability to profit by the regular grades work. Such pupils are admitted only after thorough psychological and medical examinations. Three types of special classes exist: primary special for children under twelve years of age; advanced special for the older boys and girls according to sex; and the special shop school for boys which emphasizes pre-vocational training. The special shop is made up of boys fourteen to sixteen years of age, selected from special classes because of superior manual ability. The ungraded shop for boys and the ungraded girls' class are composed of pupils over fourteen years of age selected from the fifth and sixth grades. These pupils are not considered feeble-minded but seriously retarded in school work.

The work of three groups was compared: (1) primary special, 247 pupils; (2) advanced special and boys' special shop, 264 pupils; and (3) ungraded class and ungraded shop, 68 pupils. Before the tests were given the teachers estimated in regular school practice the ability of each pupil for each grade subject studied. The ratings, the grades on the standardized tests, and mental ages were transferred to individual cards, thus making it possible, by shuffling the cards, (1) to compare pupil ranks as assigned by the teachers and the tests, (2) to compare the scores of each mental-age level with the standard scores for the grade corresponding to that mental level, and (3) to find the range of scores at each mental level and within each group studied.

## Material and Method of Study

Elementary-school tests were selected for which both standard and city (Rochester) scores were available. The tests given were: Ayres Spelling Test, Trabue Completion Language Scale B, Monroe Silent Reading Test, Judd-Courtis Arithmetic Test, and the Gettysburg Edition of the Ayres Handwriting Scale. The tests were given by the regular teachers, all of whom had had a semester of university instruction in educational measurements. The several tests were given at two weeks' intervals; and each was preceded by a group conference of all the teachers concerned during which the technique of conducting and scoring and prospective difficulties were discussed.

*Ayres Spelling Test.*—Each child was located in his 75 percent ability list, being given two 20-word tests, one each for list and sentence spelling. Location proved fairly simple except in the case of the older pupils. Close agreement between list and sentence spelling was found generally, for of 561 pupils tested, 82 percent of the grade-ability assignments were identical. In all three groups list spelling tended to rank pupils higher than sentence spelling.

In about one-third of the ratable cases, the test scores agree with the teachers' judgment. In each group the tests rate the pupils decidedly lower than the teachers, for in the three groups,

67, 64, and 54 percent respectively are lower, while 2.8, 7, and 16 percent are rated higher. These figures suggest either that the tests rated the pupils too low, or that the teachers overrated them. The standard norms have not proved too high in Rochester and 86 other cities, so the conclusion is forced that special-class teachers almost uniformly overrate spelling abilities. The teachers found that, while their pupils could spell quite difficult words in the daily spelling lesson, they failed on the easier and more common words of the test; time was being spent on learning words of relatively little use, even though these were generally retained poorly from day to day.

The compilation of the data emphasized that individual differences were no less marked among retarded children than among the normal or superior.

*Trabue Completion Test.*—On logical grounds it could be shown that this language instrument is of limited value for use with retardates, but at least it furnished norms for the lower grades, a desideratum not found in most composition and language scales. A comparison of test ranks on the Trabue Scale with teachers' ratings shows a wide range of disagreement, for in all three groups less than 40 percent of the cases had ranks which agree. In the three groups of classes, 22, 21.8, and 23 percent respectively were rated lower by the tests than by the teachers' estimates; while 40, 40.8, and 52 percent were rated higher, herein reversing the teacher-bias found in the case of spelling.

*Judd-Courtis Arithmetic Test.*—The scores of Rochester pupils compare favorably with those published by Counts. Inspection of the data revealed significant conditions. For certain easier tests the grade standards tend to approach the scores for the parallel mental-age group (13.4 for 8 mental years, and 13.1 for third grade, 16.2 for 9 mental years, and 17.9 for fourth grade, etc.). In other words, on these tests the subnormals fall only slightly below the standards set by normal pupils. With the more difficult problems, however, they fall significantly far below—1.2 for 8 mental years and 2.2 for third grade, 2.3 for

9 mental years and 5.2 for fourth grade, 2.6 for 10 mental years, and 6.9 for 5th grade, etc.

To compare teachers' judgments and test scores, a composite test score was determined for each pupil by employing the weighting technique of Counts, thus making possible the assignment of each pupil to a definite school grade of ability. In the primary group the test scores contradict the teachers' in 76 percent of the cases; in the two advanced groups they agree in less than 60 percent of the cases. The figures seem to show that special-class teachers either do not know the regular grade standards or do not so clearly detect pupil-difficulties as to lead to a reasonably reliable rating. Such marked contradictions emphasize the unusual value of this arithmetic test in calling to the teacher's attention exactly the weaknesses of the failing pupil. If the special-class teacher is occasionally to be able, by bringing a backward pupil up to a standard, to permit return to a regular grade, precisely such diagnostic tests are required to point out the exact cause of the trouble and give location for the remedial measure.

*Monroe Silent Reading Test.*—Significant features of the comprehension and rate scores on the Monroe Test were the high percent of special-class groups falling below the test norms, 86 and 72,—the small percent—13, 17, and 14 respectively for the three groups in comprehension, 11, 24, and 11 for rate—of agreement between test and teacher ranks, and the sweeping tendency of teachers to overrate.

*Gettysburg Writing Scale.*—Although writing samples were gathered with great care, it did not seem worth while finally to compile the scores. The teachers proved too unskillful with the scale to give reliable grades. Attempts at rescoring showed wide ranges of difference, the entire experience duplicating that of the Cleveland Survey, wherein finally about half the material was "graded by a member of the Survey Staff especially trained in the work."

The negative experience with evaluating the written work suggests certain questions: (1) If there is such variability in

scoring pupils when objective standards are before the eyes, what is the value of a teacher's statement that a pupil measures up to the penmanship requirements of a certain grade? (2) What are the teachers' standards when they score so differently? (3) Why is it that a pupil of a certain mental level is scarcely able to write while another child of the same mental level makes a fair score?

## Intelligence and Educational Tests

Educational test scores for special-class pupils who had been given intelligence examinations within the year were brought together. In the case of spelling it is significant that 75 percent of those of the seven-year mental level test below second-grade ability, that the eight-year mental level has 79 percent below third-grade ability, and that the nine-year mental level has 75 percent below fourth-grade ability. This seems to indicate grading accuracy for the Ayres Scale. The striking variability of distribution is also indicated, although this is slightly less marked for spelling than the other tests—with the exception of the comprehension reading test. In the case of arithmetic, it is significant that the scores according to mental age compare favorably with the comparable grade standards when the operation involved is simple, but fall far below the expected standard upon harder operations. In the case of reading, rate scores prove more variable than those for comprehension. This fact gathers significance when the grade-retardation is looked into.

Assuming that six-year mentality should secure the standard grades set for the first grade, seven for second, eight for third, etc., it became possible to make the mental age-grade distribution by subjects. This, in conjunction with the other data gathered, leads to several significant conclusions: (1) Pupils of the same mental age show striking variation in abilities as measured by educational tests. (2) No guaranty exists that a retarded pupil of a certain mental age will secure the scores set by normal pupils of that mental age, the facts being that such pupils tend to fall far below the achievement the mental age might predict.

(3) The percent of such pupils falling below, reaching, or surpassing the expectancy varies with the particular subject, yet tends to remain a constant for that subject quite irrespective of the mental-age group considered. This suggests that the mental function involved is affected constantly and fairly irrespective of the mental-age level upon which the pupil may be found; also, that a large and apparently fairly predictable percent of retarded pupils will fail to live up to their mental-age predictions, in spite of special-class instruction over a period of years. They, like the poor, are always present.

Individual analysis emphasizes the need of taking the physical condition and the emotional stability of special-class pupils into consideration when evaluating the results of any group test. Day to day variation in ability is particularly true in the case of many special-class pupils. The reliability of a test score, therefore, is such that it can be given a second or a third time and the average of the results taken.

## Summary

This investigation regarding the use of certain educational tests with retarded school children leads to the following conclusions:

1. Educational measurements are relatively of greater educational worth with normal and superior groups than with the seriously retarded, because of the numbers with grade attainments below those for which reliable norms have been established.

2. The Ayres' Spelling Test is of strong value because of its fine gradations and its range below the second and third grade.

3. The Trabue Completion Test is of little value for this group as a scale for language ability but as a supplementary intelligence test it has value.

4. The Judd-Courtis Arithmetic Test is of little value for children testing below nine mental years, but of decided value for nine-year and higher intelligence levels.

5. The Monroe Silent Reading Test proves of little value for the special-class group.

6. For a special-class group individual analyses must parallel test ratings.

7. The tendency of special-class teachers to over-estimate the ability of their pupils is very marked.

8. Variability in test attainments is fully as marked among subnormals as among those of the same mental-age level in the supposedly homogeneous grades.

# A GRAPHIC CHART FOR REPRESENTING EDUCATIONAL ACHIEVEMENT SCORES

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The teacher or principal who employs educational measurements often encounters difficulties when attempting to interpret the scores clearly to parents and other interested laymen. The percentile value of a pupil's score, showing what percent of the class has lower scores, is a useful index for persons who have learned to understand it. Percentile values are relative to the special group in which they are found, however, and one cannot be certain that the fifty percentile in one class may not be the eighty percentile in another class of the same school grade. Furthermore, if all records of tests results are in terms of a child's relative position in a particular class, comparisons between the records of different schools, methods, and classes are impossible. The needs of the school administrator are, therefore, imperfectly met by the percentile method of interpreting test scores.

The age index, which has recently been growing rapidly in popularity, would be most desirable if it were possible to obtain unselected groups of fourteen-, fifteen-, and sixteen-year-old children for standardization purposes. The method now commonly used in obtaining such age scores involves the assumption that eighth-grade pupils represent typical fourteen-year-old children. We all know this assumption is wrong.

Another danger in the age scores lies in the temptation to apply to them the popular, but over-refined, quotient technique. In Form 4 of the Thorndike-McCall Reading Scales, for example, a fifteen-year-old pupil may answer the first twenty-seven questions correctly and then check the correct answer to the twenty-eighth question instead of underlining it as directed. His T-score will then be 58, whereas it would have been 61 if he had underlined the answer instead of checking it. His reading age is there-

fore 172 months, when it might have been 181 months except for the arbitrary rule by which the test is marked. Of course, many people know that a difference of nine months in a pupil's reading age is not necessarily significant, but most teachers will not stop to consider the insecure basis on which it rests.

Considering these objections to the percentile values and to the age scores, the writer prepared a graphic chart to represent test scores. This chart can be easily used and quickly understood even by the average parent. The chart contains a picture of fourteen thermometers; each one is calibrated to represent the score from a different test in terms of the school grade for which that score is standardized. Four of the fourteen indicators are blanks, in order that one may represent by them the scores on any tests one cares to use. The other ten indicate the scores on well-standardized tests of power or difficulty in silent reading, in spelling, in composition, in addition, in subtraction, in multiplication, in division, in arithmetic reasoning, in handwriting, and in general academic ability. The standards used are the average results that have actually been found in schools where the tests have been tried.

The parent or teacher who received such a completed chart for John Smith would be able to see at a glance, for example, that John was just entering the sixth grade in reading ability, was just completing the sixth grade in spelling ability, was about ready for high school in addition ability, and so on. A study of the picture would show perhaps whether John needed most to apply himself in arithmetic or in handwriting, or whether his arithmetic powers needed most strengthening in division or in subtraction. The fact that no twenty-minute test is an entirely adequate measure of one's ability in a given field must be recognized, but a graphic picture of this sort stands in less danger of being misused than does a numerical score of 15.6 which is accompanied by tables for converting raw scores into age and quotient scores.

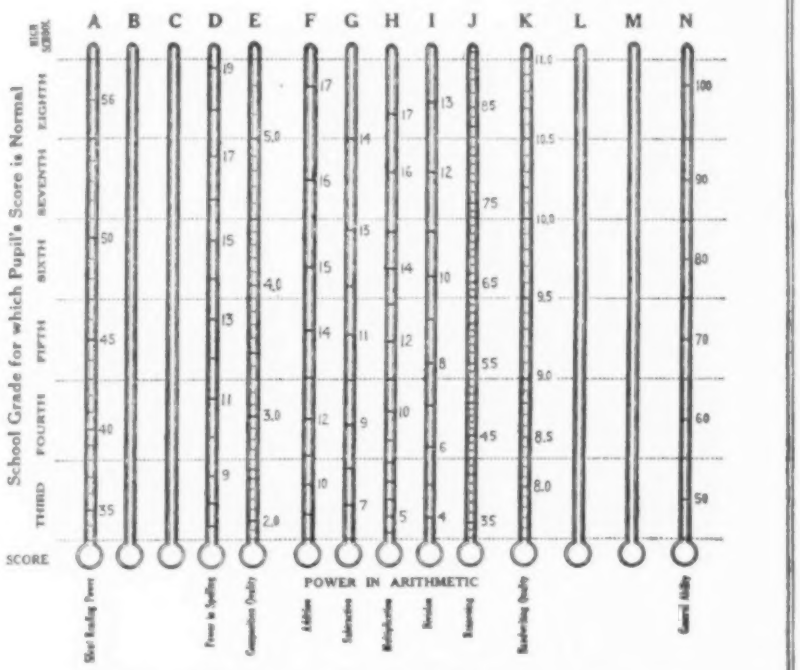
The chief objection to this type of interpretation is that some of the more capable pupils and schools may be tempted to make

Name of Pupil..... Date Tested.....

Date of Birth..... Age Last Birthday..... School Grade.....

School..... City..... State.....

Parent's Name ..... Occupation .....




# EDUCATIONAL ACHIEVEMENT CHART

EIGHT-GRADE-SCHOOL EDITION

Prepared and Distributed by M. R. Trabue, Director of the Bureau of Educational Research, University of North Carolina, Chapel Hill, N. C.

DIRECTIONS: *Record in the bulb of each thermometer the score obtained on the test which it represents. Then draw a bright colored line (red or blue) upward through the stem of the thermometer to the point corresponding to the size of the score. By following the horizontal dotted lines to the left, one may readily see for what part of the elementary school course the recorded score is normal. Use one chart for the scores of each pupil and one for the average scores of each class or grade. The tests represented above are as follows:*

A. T. Scale values on Thorndike—McCall Reading Scales.
B. _____
C. _____
D. 25 word, H—AF list, Buckingham—Ayres Scale.
E. Hillegas English Composition Scale.
F-L. Woody Arithmetic Scales, Series B.
J. Buckingham Scale of Reasoning Problems.
K. Thorndike Handwriting Scale.
L. _____
M. _____
N. Monimeters.

FIGURE 1.

less serious efforts, when they discover themselves doing better than the average obtained in the same grades elsewhere. The only reason this objection applies more directly to this type of interpretation than to numerical comparisons lies in the fact that this chart is more graphic and forceful than most reports.

The chief merit of the chart is its simplicity. When drawing the colored line to represent the pupil's score the teacher merely observes the small scale immediately to the right of each thermometer, while in reading the results from the chart one observes the grade scale at the left-hand side of the page. The chart automatically shows both relative and absolute standings in the grades. It can be used to represent the scores of an individual pupil, the average scores for an entire classroom, or the average scores for any number of classrooms together.

Progress from year to year may be recorded on the chart by drawing lines across it, connecting the tops of the colored index columns at any particular date. All of the tests are of increasing difficulty and are appropriate in all elementary grades above the second. The Educational Achievement Charts are the size of an ordinary sheet of typewriter paper. They may, therefore, be filed in an ordinary letter file and kept as a cumulative record of progress from year to year.

The uncalibrated thermometers may be used to represent scores on any well-standardized educational tests. McCall's C-scale scores,[1] or the B-scores issued by the Public School Publishing Company may be used directly in calibrating these blank thermometers. The writer will, also, be glad to supply suggestions and standards for this purpose. A carefully completed chart can be used with remarkable effectiveness as an educational profile or psychogram in admitting new pupils to a school, in determining the type of educational treatment needed, or in informing parents of the achievements of their children.

[1] McCall, W. A. *How to Experiment in Education.* New York, Macmillan Company, 1922, pages 109-110.

# CHILD ACCOUNTING

## II—HISTORICAL ASPECTS

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From the time that free public schools began to receive aid from state and local governments in one form or another, certain school records have been required by law as a basis for determining the amount of aid. Prior to the civil war educational organizations were quite simple and the available records are in the form of reports[1] by boards of education which tell, with many a rhetorical flourish, of the work of the administrative committees of such boards. Certain general data are included regarding the attendance and tardiness of pupils. Indeed, the percent of attendance was regarded at that time by boards of education, superintendents, and principals as the real index of school efficiency. Records were compiled for the purpose of securing a good percent of attendance. Standards were established and statistics were set up to attain them.

*The Chicago Report.*—In 1862 Mr. Wells, superintendent of Chicago schools, "round-robined" a score of superintendents in an attempt to secure some uniformity in child accounting. Costs in education were mounting in the sixties even as they are today. Harassed school boards and superintendents sought solace in cost comparisons with other cities, hoping for and securing confirmation of cost advances there as well as in their home towns.

Even in the sixties, a certain amount of uniformity was necessary before cities could be compared. Traveling was too expensive for school boards and superintendents so Mr. Wells, through correspondence, worked out the first known set of child-accounting rules. By 1864 they were in use in almost 100 cities; and even now they are, with but slight modifications, in fairly general operation.

[1] Reports were issued by city school systems as early as 1818 in Philadelphia; 1834 in Cleveland; 1843 in New York and Detroit, and 1853 in Chicago.

The "Chicago Rules", as they came to be called, included the following:

1. Whenever a teacher has satisfactory evidence that a pupil has left school without the intention of returning, such pupil's name shall forthwith be stricken from the roll; but any absences recorded against the name of the pupil before the teacher received this notice, shall be allowed to remain; and in making up the attendance averages, such absences shall be regarded the same as any other absence.
2. When a pupil is suspended from school by any of the rules of the school board, whether for absence or for any other cause, his name shall be stricken from the roll.
3. When a pupil is absent from school more than five consecutive school days, for sickness or for any other cause, his name shall be stricken from the roll at the end of the five days, and the absences shall in all cases be recorded while the name remains on the roll; but this rule shall not operate to prevent the suspension of a pupil, under Rule 2, for a less number of absences in which case his name will, of course, be dropped from the roll.
4. For the purposes contemplated in the foregoing rules, any pupil shall be considered as absent whose attendance at school shall not continue for at least one-half of the regular half-day session.

*Child Accounting in 1864.*—Superintendent Duane Doty, of Detroit, reporting to the board of education for 1864, said of statistics generally and of the Wells' report that:

> During the past year much labor has been given to making the school statistics full and accurate. In attendance statistics, three things are especially important and necessary, viz.: The whole number enrolled, average number belonging, and the average daily attendance.
>
> In finding the whole number enrolled, great care is required in order that pupils removing from one district to another, and those promoted from one school to another, shall not be counted twice.
>
> The average number belonging to the schools is a matter of especial importance; for it is the proper basis upon which to calculate the number of seats required, the cost of tuition, the percent of attendance, etc., etc. It is found in the following manner: The number belonging to the school for each day in the year is found, and the sum for all the days divided by the number of school days.
>
> The Wells report settles the vexed question of membership happily and justly, and its general adoption will very largely increase the value of school statistics. Of course, it will be understood that striking the name of a pupil from the roll after five days' absence, for any cause, is neither suspension nor expulsion. It simply subtracts one from the number belonging, until his return, and in no respect interferes with his right to return.

It is easy to see that leaving the name of an absent pupil upon the roll for an indefinite time, makes the number belonging too large, and increases the percent of absence unfairly and improperly.

*Temporary Lefts.*—The reason for the adoption of the much abused and criticized "temporary left" rule is easy to see. The standard of judgment was the percent of attendance and the amount of tardiness. Promotion and non-promotion, age-grade-progress, retardation and elimination, and standard tests were unknown media as educational measuring rods. It is quite obvious that if one factor is stressed insistently enough the group concerned will soon secure, by some means or other, an approximation of the required standards. Under these rules 93 or 94 percent average attendance for all schools was considered a desirable objective. Since such a standard was impossible without the "temporary left" rule, this rule practice became general.

In their eagnerness to be efficient some school systems went even further. In 1865 a comparison in attendance was made between a dozen cities.[2] Toledo was first with a percentage of 96.9. An investigation showed that in Toledo the attendance was not kept on the Chicago basis. Names were dropped from the rolls when pupils had been absent five days, but those whose names were dropped were considered to have left on the day they actually did leave, that is at the beginning of the five days, and not, as the Chicago rule required, after they had been absent five days. Judging from the remarkable percents of attendance

[2] Percentage of attendance in twelve cities in 1865:

| *City* | *Average percent of attendance* |
|---|---|
| Toledo | 96.9 |
| Providence, R. I. | 95.7 |
| Cincinnati | 93.9 |
| Cleveland | 93.5 |
| Boston | 93.0 |
| Detroit | 91.6 |
| Indianapolis | 91.2 |
| Chicago | 90.8 |
| St. Paul | 87.5 |
| Louisville | 87.0 |
| Milwaukee | 86.5 |
| Harrisburg, Pa. | 75.0 |

shown, some of the other cities probably followed Toledo's example.

*Census of 1870.*—In 1870 the United States government made the first general accounting of school children and thereafter general statistics of public and non-public schools appeared in the reports of the Bureau of Education and in the United States Census.

From 1870 until 1912 the question of educational statistics and records was a moot question at meetings of the Department of Superintendence.[3]

*N. E. A. Committees.*—Committees[4] were appointed in 1863, 1874, 1881, and 1891 for the purpose of developing a uniform terminology and procedure in the preparation and collection of school statistics. The work of these committees was not of a satisfactory character. It dealt almost entirely with statistics in the mass rather than with individual child accounting.

Dr. William H. Maxwell, superintendent of schools in New York City, published in his 1904 report age-grade statistics that showed 39 percent of the elementary pupils to be retarded. The publication of this report caused considerable discussion in educational circles. In 1909 Dr. Maxwell appointed several committees to ascertain the causes of over-age conditions. The published report of this investigation was issued as part of his *Twelfth Annual Report.*

In 1908 David Snedden and William H. Allen published a volume on *School Reports and School Efficiency* which brought together the best information then available on reports and illustrated the possibilities of their use. This book was widely read and was reprinted in 1911.

*Thorndike and Ayres.*—The appearance, early in 1908, of

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[3] According to Miss Halle D. Woods, of New York, in 1905, school statistics had been discussed at the meetings held in 1859, 1863, 1872, 1874, 1877, 1881, 1885, 1886, 1887, 1889, 1891, 1892, 1895, 1897, 1899, 1900, 1903, 1904. Further discussions occurred at the 1907, 1909, 1910, 1911, and 1912 meetings.

[4] A brief account of these committees and their work may be found in *School Reports and School Efficiency* by Snedden and Allen, Macmillan Company, 1911, chapter III.

Thorndike's *Elimination of Pupils from School*[5] caused much comment in educational circles. It was followed in 1909 by Ayres' *Laggards in Our Schools*. Dr. Bachman's work in the New York survey (1912) continued to draw attention to the question of over-age conditions and pupil elimination. The productions of Thorndike and Ayres were read throughout the country and started a series of educational discussions. Through these discussions superintendents became clearly aware of the need for greater uniformity and continuity of school records to the end that accurate data for the scientific study of school conditions might be secured. Thus, although age-grade surveys had been made by individual cities prior to this time, it was these publications by Thorndike and Ayres that first brought the general problem scientifically developed, before the educational world. The books were epoch making and modern child-accounting activity dates from their publication.

*N. E. A. 1911-12 Reports.*—The committee of the National Education Association on Uniform Records and Reports made a preliminary report[6] in 1911 in which a definite system of cumulative individual school records was recommended. The following year the committee made its final report which was published as a separate bulletin by the National Education Association.[7] This excellent work was generally well received and many of its recommendations were made effective. The individual record cards and the standardizing of financial statistics were its big contribution.

*Survey Literature.*—Survey literature has in several instances described child-accounting conditions as they existed in the various centers considered. For example, a complete study of Cleveland was made by Leonard P. Ayres,[8] in 1915; and a study of

[5] Published as United States Bureau of Education Bulletin No. 4 of 1907.

[6] Payson Smith, chairman; George D. Strayer, secretary, William H. Elson, E. C. Warriner, and Charles M. Lamprey comprised this committee. The preliminary report appeared in the Proceedings of the N. E. A. (1911) pp. 271-302.

[7] Report of the Committee on Uniform Records and Reports Bureau of Education Bulletin, 1912; No. 3, whole number 471.

[8] Ayres, L. P. *Child Accounting in the Public Schools*, Cleveland Educational Survey. Cleveland, Ohio, The Survey Committee of the Cleveland Foundation, 1915. 68 pp.

St. Louis was made by H. C. Morrison,[9] in 1918, under the direction of Dr. Charles H. Judd. The St. Paul Survey,[10] in 1917 touched upon the subject, emphasizing certain attendance aspects. While most of the surveys recognize the importance of child accounting and comment freely upon apparent weaknesses, in none of them has there been worked out a standard uniform procedure for securing more desirable results. Such a procedure was, however, worked out and published in 1918 as the Strayer-Engelhardt series of school record forms. These forms have had a wide distribution, and are still largely used.[11]

Dr. E. J. Ashbaugh, while at the College of Education, University of Iowa, worked on standard definitions of child-accounting terms and developed an excellent basis for a state procedure, recognizing the factors of census, attendance, and child progress. His work was a valuable contribution to child-accounting literature.

*The Detroit Study.*—Detroit was one of the first large cities to feel the inadequacy of child-accounting and financial records. In the fall of 1918, Superintendent C. E. Chadsey established a department of administrative research and authorized a study of current conditions. The appointment of Frank Cody to the superintendency in 1919 was followed by the adoption of a child-accounting system, based upon fact, and containing the elements necessary for intelligent and successful modern administration.

*The Inter-City Conference.*—In the following year a number of the larger cities, whose superintendents had begun to feel the inadequacy of child-accounting and financial records, organized the Inter-City Conference.[12] In 1921 this body appointed a re-

[9] Morrison, H. C. "Child Accounting and Attendance," *St. Louis Survey.* St. Louis, Mo., Board of Education. 1917. 66 pp. pp. 203-38.

[10] Strayer, G. D., Coffman, L. D., and Prosser, C. A. *Survey of the School System of St. Paul, Minnesota.* St. Paul, Minnesota, Board of Education. 1919, pp. 32-38.

[11] The Strayer-Engelhardt system is published by the C. F. Williams Company, Albany, New York.

[12] Composed then of Superintendents of New York, Chicago, Detroit, Cleveland, Buffalo, Cincinnati, Milwaukee, Indianapolis, and St. Louis.

search committee[13] to develop a uniform child-accounting terminology and a standard classification of costs and accounts that would permit reasonable comparisons between cities. The Committee first reported on a uniform child-accounting terminology; and this report was adopted by the Conference at its Cleveland meeting in April, 1921. These rules recommended in the report are reproduced here:

*Registration or Enrollment.*—Registration or enrollment shall designate the first entry of a child into the public school system during the current semester, term, or quarter, and shall be recorded at the first session the child is in school. Registration is an increasing number which cannot be diminished.

*Received by Transfer.*—Pupils may be received by transfer from schools within the city, (or if a county, state, or other unit of organization exists, from schools within the territory). These shall not be added to registration.

*Transfers and Losses (Lefts).*—This item shall include transfers and losses to other educational institutions or permanent withdrawals from the system.

Permanent withdrawals shall include all pupils discharged to institutions, discharged by reason of employment permit, discharged on account of marriage, or on account of death, all discharges of pupils over and under legal age, discharges by high-school graduation, discharges to another school corporation, permanent expulsion of pupils over legal age, or mental incompetency.

A pupil is to be considered as a member of a school until he is known to have been permanently discharged by reason of death, removal from the district, or as a result of having fulfilled the requirements of the compulsory education laws. It is understood there shall be no temporary withdrawals.

*Membership.*—(Enrollment at Date, Number Belonging, or School Register). Membership shall be registration or enrollment plus receipts by transfers and minus losses (lefts).

*Total Enrollment or Original Registrations.*—Total enrollment shall include every pupil who has been in attendance at any time during the year, counted only in and for the school of original registration.

*Average Membership.*—(Average Number Belonging or Average Daily Register). Average membership shall be the aggregate of the daily membership for the term, semester, quarter or other period divided by the actual number of days school was in session.

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[13] The committee consisted of Eugene Nifenecker, New York; W. W. Thiesen, Cleveland; Murray Dalman, Indianapolis; and Arthur B. Moehlman, Detroit.

*Average Daily Attendance.*—Shall be the aggregate of the daily attendance for the semester, term, quarter, or other period divided by the actual number of days school was in session.

*Percent of Attendance.*—This item shall be secured by dividing average attendance by average membership.

*Student Hours.*—A student hour may be defined as a pupil instructed for sixty minutes. It may be secured in the following manner: Daily attendance times length of instruction period in clock hours.

*Per Pupil Costs.*—Pupil costs shall be determined upon three bases: (1) average membership; (2) average daily attendance; (3) in terms of student hours.

It is understood that the practice of computing costs upon total enrollment or registration is to be discouraged for the reason that this figure includes pupils who may have been in attendance a very short time during the term or semester. Such computations are, therefore, fallacious and misleading. It is further recommended that costs be reckoned on average daily attendance, and in terms of student hours rather than membership.

The report made two definite contributions. In the first place, the "temporary left" clause was dropped, and accounting procedure was made more definite and placed upon a fact basis. In the second place, it was recommended that costs be determined upon the basis of actual service rendered, attendance of children, or, still more exactly, upon instruction hours.

*Michigan Committee.*—In 1922, Dr. Allan S. Whitney, president of the Michigan State Teachers' Association, appointed a state committee of three[14] on Uniform Child Accounting and Unit Costs. The first task of the committee in cooperation with State Superintendent of Public Instruction Thomas E. Johnson, was to develop a comprehensive system of child accounting, state wide in its application and uniform in respect to procedure. The Preliminary Report[15] was made to the superintendents, commissioners, and principals of Michigan in May, 1923. It will be published as a final report during 1924. The tentative procedure follows generally the accounting rules developed by the Inter-City Conference. The contributions of the Michigan report are: (1) the development of a continuing school census

[14] The committee consists of: Arthur B. Moehlman, Detroit, *Chairman;* Wilford L. Coffey, Lansing, and Charles Dawson, Grand Rapids. Reappointed for 1923 by President Edwin L. Miller.

[15] Published by the M. S. T. A., May, 1923.

for the entire state; (2) a uniform marking system from the kindergarten through the university; (3) a cumulative individual record card combining at once the scholastic, psychological, and health records of a child from the kindergarten through the high school; and (4) a uniform transfer record for the entire state.

*Summary.*—An attempt has been made to summarize briefly the major points in the development of child accounting. Emphasis has been given to the efforts to provide uniform terminology and cumulative individual records. In spite of the large amounts of work by associations, committees, and individuals, educational records are still so poorly kept, and the accounting for the individual child is so vague that even in progressive states it is hardly possible to transfer a child from county to city, or from north to south, without causing him to lose through the transaction. State and city superintendents are awake to this condition today as never before and are interested in its elimination. The immediate need is for the development of a simple technique in child accounting, theoretically sound, and easy to administer.

# Editorials

## THE ROOT OF THE SCHOOL QUESTION

Where do the people place education in their scheme of things? This is the basic, and ultimately the only, question regarding the development of the American public school.

Everyone has his "scheme of things," just as everyone is said to have his philosophy. The golf score of this one is absorbing; to that one a dog-eared first edition is especially delightful. My lady goes in for uplifting, while the master cultivates horses and dogs. The world is full of a number of people and they all attach different values to things. In virtue of this, matters that in an objective sense have the same nature take on vastly different subjective meanings. The question we raise is this: What is the personal, subjective meaning of education for the individuals who constitute the public—the meaning which actuates them when they vote, talk, pay taxes, and take certain attitudes?

People have posted on the inside walls of their heads and hearts a list of the things with which their lives are concerned. The items on this list are apparently assigned certain values, and at a given moment these items are arranged in the order of their supposed worth. The list constantly changes. New items are being added as new interests arise. Old items disappear or drop far down on the list. And all the time the values of these items, like market quotations, are changing. Around New Year's Day certain quotations are high, such as quitting smoking, or going to bed early, or agreeing with one's mother-in-law. At times, due to proximity or urgency, or to some unessential circumstance, relatively trivial things take on an aspect of exaggerated importance, and get in the way of things whose right to precedence is intrinsic. Yet even then we shall have to say that this

proximity, this urgency, this artificial inflation is part of the immediate basis of value; and if a person becomes a putterer, forever busying himself with little things, it is quite proper to say that the fault is with his sense of values rather than with his failure to put such values as he has into practice. In other words, he acts according to his present personal sense of values, although his values may be quite different from those entertained by people in general and indeed quite different from those which this hypothetical person would himself entertain if he could be made to do a little thinking. If he is to act wisely and rightly, he must be brought to a better sense of values, for it seems to be essentially true that people act or refrain from acting, persist or quit, spend much money or little, according to the valuation they put upon the objectives which compete for their attention.

For example, when we fail to attend a meeting or to write to a friend or to vote on election day, we really fail because these things appear to be of little importance. When, therefore, after a year or so of silence, you write to your friend and seek to excuse your long delay on the plea that you have been "so busy," you in effect say to him, "For an entire year writing to you has seemed to me less important than any of the thousands of things I have done. A certain number of these things were truly important but many of them were trivial. I have attended fifteen or twenty plays and I have spent two or three hundred hours playing bridge. I have read trash and I have wasted no end of time in the inanities of conversation. All these things I have preferred to writing to you; and the accumulated pressure of an entire year has now barely sufficed to make this act seem too important to be further neglected."

Of course you don't say such a thing; but your friend, if he stops to think, and if he is not too deeply tarred with the same stick, will see the real meaning beneath your subterfuges. The fact is that we are unaware of our mendacity. We are inveterate posers, and in our actions we are never as clever or independent, as honest or haughty or courageous or inscrutable as we like to imagine.

Accordingly the springs of our action are not necessarily what we think they are, and by no means what we would often have others believe they are. We do the things which to us have the greatest value, and the criterion of value is some form of satisfaction.

When the farmers of a certain county elected two or three new members of the county board on a retrenchment program, they *talked* about the little red schoolhouse and local independence, but they were actuated by the desire to save $2.17 apiece in taxes. When the board members whom they had elected reduced the superintendent's salary and cut his assistants off the payroll, they didn't have to do any talking. They had the power and power is not talkative. They were actuated, however, by the same motive as their electors; and they deprived the county schools of supervision to save cash enough for each of them to take his family to one more movie each year.

Still more fundamental, however, than the love of money in the case of these men is the low estimate in which they hold education. On their list of the things of life the school is pretty well toward the bottom. Perhaps the kind of education they know about isn't worthy of a high valuation. Perhaps for them it means a drab and joyless activity carried on in a dark and ill-ventilated room under the eye of a crabbed human flail—a strait-jacket activity involving sitting bolt upright in impossible seats and learning a fixed amount from a prescribed book—an activity carried on in violation of childhood, with play banished, spontaneity left at the door, and interest distrusted.

If this conception of education, or something like it, prevails, it will account for slow progress and the tendency in many quarters to retrogression. We are accustomed to believe that the faith of the people in education is strong. This is indeed the case, but it admits of many exceptions. It makes a great deal of difference *what kind of education the people have in mind*. If they realize the nature of it in its modern setting they will place it high in their scheme of things. They will set a high valuation upon it. They will realize that it accomplishes vastly

more than it even attempted to accomplish in the days of their childhood.

Under these circumstances our task is clear. The public school belongs to the people. Its possibilities depend upon their faith in it and their support of it. No school deserving the name of public will be run behind closed doors. It will take the people into its confidence and assume the rôle of leadership for the purpose of realizing the best aspirations of the people. Under these circumstances it will not lack support or prestige or dignity. The people will have faith in it and will set too high a valuation upon it to permit it to fall short of its largest mission.

Viewed in this light, the fundamental question is not good teachers nor adequate support, for both of these rest upon a deeper consideration, namely, the estimate of education which lies in the minds of the people. If this is true, it is certain that some superintendents are trying to secure financial support by devoting too much attention to salary schedules, budgets, and unit costs. Let them show the people that the school is worth their money, and the money—to say nothing of other things—will not be withheld. B. R. B.

## CAN WE PAY FOR EDUCATION?

The idea is more or less prevalent that education is costing too much. Some alarmists see the possibility of a breakdown in public education because of the inability on the part of the people to pay for it. If, however, a real and abiding faith were reposed in it, if a high valuation were set upon it, it is idle to suppose that the people would not be resourceful enough to finance it. When it is said, for example, that the people cannot afford to pay for public education, the statement is made with the present basis of support in mind. It would be more accurate to say not that the *people* cannot afford the price, but that *property* cannot afford the price.

The idea that we can't pay any reasonable educational bills is based on the wholly gratuitous assumption that the only way to raise money for the schools is by means of the property tax.

This is not the only way, and there are many who assert that it is not the best way. The truth is that our ability to pay taxes or anything else is not measured by the property we own, but by the income we receive. The property tax falls heaviest on the farmer. The merchant who owns property of the same valuation as the farmer's gains more from it because of his more rapid turn-over. He is therefore better able to pay taxes than the farmer. He gets more. The farmer doesn't pay by selling a piece of land; he pays from his income. The tax on property is therefore not as direct as the tax on incomes. It can only be justified on the assumption that property is a better index than income of ability to pay; and this is not the case.

We hear it said that higher taxes will be confiscatory. This again is based on the idea of the property tax. Suppose that all taxes were placed on automobiles. In a little while would not people be associating taxes with automobiles as if the two were naturally associated? And would they not say, even if taxes were much less than they are now, that this money collected on their automobiles was too much for the valuation of the cars to stand? Many would let the state take their motor cars rather than pay the taxes on them. Still others would try to dispose of their cars to their fellow citizens and thus to escape the tax. It might turn out, however, that nobody would buy them. The exasperated owner would declare himself "taxed to death," despite the fact that his house, his chattels, his factory, or his farm "paid" nothing. Under such circumstances people of slow wit declare, "We must retrench; we cannot pay such high taxes."

If it is accepted as true that income—corporate as well as individual—is the best index of ability to pay taxes, then it becomes important to know what portion of our income would suffice to support public education. According to figures furnished by the N.E.A. and quoted from a publication of the National Bureau of Economic Research, the income of the people of the United States in 1920 was seventy billion dollars. In that year the cost of education was given as a little over a billion dollars. Therefore 1.48 percent of the income would have

paid the bill. This percent for 1920 was not quite as high as it had been in 1914; yet people talked much more about mounting costs in 1920 than in 1914. Why? Because the 1920 tax rate on property was higher than the 1914 tax rate on property, despite the fact that in relation to ability to pay (income) the 1920 tax was not as high as that of 1914.

Since 1920 the cost of education has advanced and so has the national income. It seems unlikely that this cost now exceeds two percent of the income. The question, then, resolves itself into this: Can we as a people afford to pay for education twenty dollars per thousand dollars of our income? In its application to individual taxable incomes it may well be that this will amount to as much as twenty-five dollars per thousand. Is this unreasonable?

We have said above that the root of this question is the estimation in which the people hold education; and their opinion of it will be largely what the school people give them. A great many such articles as McAndrew's in the recent issues of *The World's Work* should be forthcoming. But the question of whether twenty dollars per thousand dollars of income is reasonable depends also upon the necessary expenditure for other things. In other words, can a family of moderate means, after paying for rent, food, clothing, and other generally accepted items, afford twenty dollars for each thousand dollars of income? In seeking an answer to this question, we shall simplify matters if we consider a family or a person who pays no property tax; one, in other words, who pays rent—his tax, of course, being included largely in his rent and to some extent in other items.

We may now consult one or more of the family budgets prepared by economists. We have selected one published in January, 1920, in the *Annals of the American Academy of Political and Social Science*. It represents suggested expenditures for rent-paying families of various incomes. Among the classifications is one called "Health, recreation, and education." The amount for this item varies somewhat according to the size of the family. The mean amount for the family with an income of $2,400 is $162. Only $48 of this would be required to meet

an educational income tax of $20 per thousand. For the family with an income of $3,000 the budget amount is $204 and the educational income tax would be $60. The figures for the $5,000 income would be $282 and $100.

Thus it will be seen that the amount for education on the income tax basis could easily be brought within a budget competently estimated for a family of moderate income. Moreover, the budget used in this case would become more attractive, especially in regard to rental, if property were relieved of the school's part of the tax. In fact, considering what the family with children receives in return, an expenditure of $48 to $100 a year is ridiculously small. By no other means could these children be given instruction for many times this cost. As for the single person and the childless couple, their ability to pay an educational income tax is, of course, greater than that of a family with children.

No, there is really no basis for arguing that we can't pay for education. The only reason why the question is seriously raised is because of the way we now pay for it. In our judgment, two moves should be made in financing the schools. First, boards of education should be made independent, should levy their own taxes, and should be responsible to the people for their levy and their expediture. Too much and too often is education tangled up with political questions in which it has not the slightest interest; and too frequently the people are unable to make known their wishes regarding education because they have little opportunity to give it undivided attention. Second, the school levy should be on individual and corporate incomes. This would serve still further to set the schools apart from all other claimants upon the public purse. Under these circumstances education could be adequately financed and the people could know the educational program as they cannot now know it. Moreover, with direct and strict accountability to the people, the schools would have to justify their requests and assure the people of the wise use of money. This obligation the schools should willingly assume. B. R. B.

# Reviews and Abstracts

WELLS, GUY F. *Parish Education in Colonial Virginia.* New York, Teachers College, Columbia University, 1923. 95 pp. (Teachers College, Columbia University Contributions to Education, No. 138.)

This study undertakes to determine the nature and the success of the educational means employed by the parishes of colonial Virginia. The English precedent for each type of educational activity is considered and its adaptation to the peculiar conditions of the Virginia parish is noted. A brief account of the nature of parish government is followed by chapters on the prevailing types of educational effort in the parish, on the endowed parish schools, on parish apprenticeship, and education in the parish workhouse. Doctor Wells has relied largely on original sources, such as parish vestry books and other official records of parish government.

Perhaps the most interesting disclosure which the author makes is that the parish "readers" or clerks were generally not trained clerics. In the official parish records there is no reference to the work of readers as teachers. He also finds that the parishes supplied no schools with teachers, and concludes that any teaching which the readers did, was done as a purely private undertaking. It was a common practice, he says, for ministers to teach school but the custom was not universal; and it is evident that their work as teachers "does not come within the scope of parish educational activity."

The Virginia parishes did not follow the common English custom of expending parish funds for the education of poor children in private schools. "An examination of practically all of the extant vestry books shows only five cases." These cases, Doctor Wells concludes, signify that the vestries thought they had the right to develop such a practice but did not deem it desirable to do so. Nor was it customary for the vestries to provide schoolhouses for the free use of masters to induce them to conduct schools.

Only seven of the ninety parishes at the close of the colonial period had endowed schools and these the author looks upon as "exceptional rather than common arrangements for educating parish children." Two of these schools were founded on the bequests of the benevolent Benjamin Syms and Thomas Eaton and reflected a well-known English custom. The treatment of endowed schools is interesting enough, but it contains little that is new. Moreover, it properly has no place in a study of this kind. Endowed schools such as that of Syms and Eaton developed without any effort by the parish government and should not be considered a part of the educational activity of the parish.

The treatment of education in the parish workhouse and through parish apprenticeship contains little that can be regarded as a contribution to the

study of colonial education. The dominating purpose of the apprenticeship and poor-law practices was obviously more nearly economic than humanitarian, educational, or vocational, if the point of view of governing authority is to be considered. The conclusion that this work of Virginia in the education of the poor served to retard rather than develop the idea of common schools seems warranted in the light of the efforts made by the State before 1860.

EDGAR W. KNIGHT

*University of North Carolina*

EWER, BERNARD C. *Applied Psychology*. New York, Macmillan Company, 1923. 480 pp.

Professor Ewer has attempted to steer a course between the unscientific, unreliable, and often unhealthy "psychology" of the popular lecturer and the elaborate, technical, and highly difficult psychology of the experimental investigator. In this worthy undertaking he has attained a high measure of success. One is left with the feeling, however, that in seeking to avoid technicalities he has too greatly slighted the recent experimental findings of his science, and that, in popularizing his material, he has failed to lead the reader adequately to appreciate the scientific rigor with which many of the problems of applied psychology are now being investigated.

Nevertheless, Ewer's *Applied Psychology* should find favor with a wide circle of readers. This book will be helpful to the general reader who wants pointers on how to think more clearly and profitably, how to learn more easily and tenaciously, how better to control the emotions and direct the will. It will also be a boon to the man who wants to know how much reliance to place in what is being said about psychoanalysis and psychotherapy and how he can turn the principles of mental health to his own account. A wholesome, critical survey of this interesting field occupies a quarter of the book. Finally, it is intended for the man who wants to know something of what the scientists are finding out about the psychology of industry and commerce, about vocational selection and mental tests, about business efficiency and the psychology of advertising, but who does not wish to concern himself with the technical aspects of these questions.

The book may, in general, be characterized as a psychology of common experience. In it may be found quantities of the same sort of applied psychology that has helped to make James's *Principles of Psychology* so perennially popular.

But Ewer has by no means exhausted the field of applied psychology, not even of popular applied psychology. One wishes, for instance, that he might have drawn even more than he has upon the results of experimentation in industrial and business psychology which have accumulated since the war. Much real progress is being made in this and related fields.

One must not pick up this book with the expectation of finding a thoroughgoing psychotechnology. It does not pretend to be such. Ewer has assembled an array of principles and precepts highly valuable to the individual in his everyday life and relationships. With the derivation of these principles and

their implications for further investigation he is little concerned. The references to specific investigations are rare and few quotations from them are made. The treatment of many topics is exceedingly general and the terminology sometimes indefinite. To the average reader and the elementary student, for whom the book is designed, these criticisms are of minor importance. The reviewer wishes to emphasize that Ewer has not attempted to write a thoroughly technical book; but that in his less pretentious, though in many respects more difficult task, he has done a very creditable job.

LEWIS R. FRAZIER

*Harvard University*

GATES, C. RAY. *The Management of Smaller Schools.* Boston, Houghton Mifflin Company, 1923. 174 pp.

*The Management of Smaller Schools* is a handbook for the principals and superintendents of villages and smaller cities. The author has combined in an admirable fashion the fruits of professional study with a rich experience as teacher, principal, and superintendent of smaller schools. The volume is helpful in four respects: It is written in an optimistic vein. The illustrations at every turn are concrete and evidently from the author's own experience. Every chapter is replete with allusions to the best sources of professional information. The author's analysis of conditions and problems is clear cut and easily visualized. As the editor puts it, the book "is unique in its thorough helpfulness."

The author's optimism is interesting, refreshing, sometimes näive. Since he believes in the superintendency as "a new profession," he wastes no time on the petty, disagreeable phases of the work, but proposes a workable solution from his own experience, study, or observation for each of the more important problems facing the administrator of smaller schools. The chief characteristics of his attitude toward the subject are well expressed in the sentence, "For the man who can do these things the new profession of school administration offers large possibilities, financially as well as otherwise."

One feels from reading almost any page of the little volume that its author has lived through the thing he is describing, for there is a clarity and force of illustration which is born usually of experience. Allusions to sources of professional information indicate a sound background of professional study on the part of the author; but this part of his work is not nearly so helpful to the reader as he might have made it. He gives few references as to where or how such helps as he suggests may be obtained. He recommends certain standard tests; but he neither tells the reader where these particular tests may be obtained, nor does he suggest that the reader might find others better suited to his purposes. While the book will undoubtedly create a desire for further professional reading, it makes no attempt whatsoever to lead the reader to the source materials which the author evidently had in mind.

In no respect is the value of the book so apparent as in the author's analysis of conditions and problems. By combining a clarity of analysis with simple but vivid illustrations he has accomplished that which he did not claim—originality. It is this phase that makes the book interesting reading. Even

the experienced superintendent will find an hour with C. Ray Gates a profitable diversion; but, again referring to the editor's suggestions, *The Management of Smaller Schools* is a book primarily for superintendents of small school systems who aspire to bigger superintendencies and who want to be fit for the job when the promotion comes.

J. CAYCE MORRISON

*Ohio State University*

HALL, G. STANLEY. *Life and Confessions of a Psychologist.* New York, D. Appleton and Company, 1923. 623 pp.

The publishers have advertised G. Stanley Hall's autobiography as a single volume. That is an error, for it is a whole library. This does not refer primarily to the number of pages, although they constitute a serious menace to a single binding. The contents of the work are entirely too diversified and heterogeneous. Glancing over the pages of mingled reminiscences, travelogues, social and educational criticisms, psychological dicta, philosophical digressions, and local history, it is difficult to distinguish whether the pen is being wielded by the man, the tourist, the sociologist, the educator, the psychologist, the peripatetic, or the historian.

And yet, one cannot remain permanently piqued at the author for his verbosity. To a sympathetic reader there must appear a minor strain of pathos. It is the age-old tragedy of misunderstanding. Undoubtedly Doctor Hall wrote his book as an apology for a life that he feared was a failure, yet desperately hoped was a success. The inferiority complex, which afflicts so many members of the human race, again and again exhibits its influence. In his conclusion Doctor Hall states that he wrote his book primarily for himself. He feels that he has never had a fair fighting chance in spreading his views. He has been criticized unmercifully—especially on the score of psychoanalysis. This book is largely self-analysis, for which the author has always had a tendency.

The chapter on "Progress in Psychology" will undoubtedly most interest the majority of educators. There were several distinct stages to Doctor Hall's growth in this field. He was interested at different periods in mental evolution, comparative psychology, and the cult of the child. His other interests were, finally, largely subverted in favor of Freudian mysticism. How thoroughly the author approved of the cult is indicated by his belief that "the advent of Freudianism marked the greatest epoch in the history of our science." The connection between psychoanalysis and science he does not make entirely clear. It is almost unbelievable that a man of Doctor Hall's antecedents and broad training should have succumbed so readily to the obscurity of Freud. To some it must appear a great intellectual weakness. Despite his undoubted progress, he seems unable to eradicate the mystic element from his thinking. He clings tenaciously to the precedence of the psychic over the physical in psychology. Dr. Hall cannot be accused of being pragmatic; he would deny the accusation himself most vigorously.

The book is a decidedly valuable contribution to educational literature. It is both stimulating and suggestive. One may disagree with Doctor Hall's

ideas, but it cannot be denied that he has ideas. That in itself is a refreshing novelty. *The Life and Confessions of a Psychologist* must not—in fact, it cannot—be taken as the staple of one intellectual meal; rather, it is the pot-pourri to be dipped into whenever the appetite is jaded.

PAUL J. FAY

*Westerville, Ohio*

STEAYER, GEORGE D., AND HAIG, ROBERT M. *The Financing of Education in the State of New York.* New York, The Macmillan Company, 1923. 191 pp.

This is the first volume of the long-heralded Education Finance Inquiry series. Its purpose is to present the problem of school finance in the State of New York by showing and interpreting the trends of expenditures and sources of school moneys.

The chief facts of the volume are similar to those presented in many other surveys of school finance and thus do not startle the reader. They show that school costs have mounted kaleidoscopically in recent years, due to such factors as increased school attendance, better school facilities, and the decreased purchasing power of the dollar. Since they are influenced by such causes school costs are not likely to decrease, but are likely to continue increasing; this solemn conclusion must probably be faced by all states.

Although the volume is not "the first complete formulation of principles involved in financing education and the first fully interpreted statement of facts on the cost and support of education within the borders of any state," as one of the authors "admits," the present reviewer has no hesitation in saying that it is the best and most complete survey of the school finance of any state which has yet appeared. It covers more phases of the problem than any other similar study. Moreover, many of the methods of collecting, organizing, and treating the data of the study are new and unusual; here the volume makes its outstanding contribution.

The volume is well buttressed with excellently organized data, though in a few instances interpretations are made and conclusions are affirmed without the supporting data. As a whole the book is written in a readable style, though very frequently the expressions are "woolly" and "pedaguesical," "broken-back" sentences are common, and poor choices of words abound.

The book will, of course, be of interest primarily to the people of New York, but, because of its large scope and the generally applicable technique employed in it, it will be of interest to students of school finance everywhere. Thanks and congratulations are due Professors Strayer and Haig. The twelve remaining volumes of the series, of which this volume is the first, are awaited with interest.

WARD G. REEDER

*Ohio State University*

# News Items and Communications

**This department will contain news items regarding research workers and their activities. It will also serve as a clearing house for more formal communications on similar topics, preferably of not more than five hundred words. These communications will be printed over the signatures of the authors. Address all correspondence concerning this department to Doctor E. J. Ashbaugh, Ohio State University, Columbus, Ohio.**

The *New Jersey Education Bulletin* for March is devoted to material for Arbor Day.

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*Nationality and Age-Grade Surveys in the Public Schools of Newark, New Jersey*, is the title of Monograph No. 11, published by the board of education of that city. The data are two years old, but present a large amount of material which students of child accounting will find both interesting and valuable.

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The Southern California Society for Mental Hygiene launched in March the *Mental Hygiene Bulletin* which is intended to keep the community informed on the matters relative to mental hygiene. J. Harold Williams is the editor of the bulletin, which will be published monthly in Los Angeles.

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The Gerry Tests of High-School Chemistry, published by the Harvard University Press consists of twenty-five items involving a rather miscellaneous variety of test procedure. The multiple-choice, sentence-completion, and factual-memory devices are used. Two forms are available, and tentative norms have been determined for half-year and year achievement.

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Mr. Clayton M. Negus, superintendent of schools of Greybull, Wyoming, during the past two years, was recently re-elected at a distinct increase in salary. During these two years he has given the schools a program in efficiency and economy that has been greatly appreciated by both taxpayers and parents.

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The Los Angeles *Educational Research Bulletin* of February 18 contains a brief reference to the placement quotient as an instrument for use in classifying pupils in the junior high school. The placement quotient is determined by dividing the median age of the grade in which the pupil is actually placed at the time of the testing by the median age of the grade in which the child should be according to his mental age.

The *Maryland School Bulletin* for March is devoted to silent reading, and contains 87 pages heavily loaded with practical suggestions and illustrative material. The bulletin was prepared by Miss I. J. Simpson, state supervisor of elementary schools, and is designed to be a genuine help to teachers who are dependent upon long distance supervision.

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In the survey report on school-building program for the Junction City schools, Kansas, the Bureau of School Service, University of Kansas, has analyzed the situation, and sets forth a building program with the procedure for adequately financing it. The material is well organized and a large amount of data is presented.

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We received sometime ago from Miss Sarah M. Imboden, elementary supervisor at Decatur, Illinois, a mimeographed bulletin which was prepared for use in the city schools during "Better English Week." Through the statement of aims, type lessons, and reference materials devised by the various teachers throughout the system, the bulletin was intended to give a general perspective of the English work throughout the elementary school.

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The following data on the intelligence of 1,250 entrants to the Whittier State School, California, is furnished by J. Harold Williams, formerly of that institution.

| Classification | Percent |
|---|---|
| Superior | 2.4 |
| Average | 20.2 |
| Dull-normal | 24.7 |
| Border-line | 24.7 |
| Feeble-minded | 20.0 |

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Miss Frances Martin, of the Department of Psychology and Educational Research of Los Angeles, reports in the March 3 issue of their *Educational Research Bulletin* the following summary of 500 consecutive cases referred to the department by teachers as problem cases:

| Classification | Percent |
|---|---|
| Idiots | 2.4 |
| Imbeciles | 9.6 |
| Morons | 29.2 |
| Border-line | 22.0 |
| Dull-normal | 19.4 |
| Normal | 12.2 |
| Superior and above | 5.6 |

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Professor Herbert A. Sturgiss of the University of Washington asked 313 students in introductory sociology to estimate the advantage received during the course from lectures, discussions, assigned readings, and written work. The average of the estimates gave 37 percent to lectures, 24 percent to discussions, and 19 percent each to the reading and written work. Individual variations were significant, since individual rating for each phase of the work ranged from zero to 75 percent. Professor Sturgiss raises the question whether

the different methods of conducting the course may not be tested by some such questionnaire.

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Mr. Fred C. Ayer, director of research of the Seattle public schools, issued during March a mimeographed bulletin on the progress of the pupils. The bulletin presents a large amount of pertinent data and closes with a summary unusually well stated. Among the findings are the following:

1. Seattle's daily attendance is 83 percent of the enrollment as compared with 77.7 percent in fifty other cities.
2. The average time required to complete the eight elementary grades is 7.9 years.
3. As compared with other cities Seattle is high on age-grade basis, having 10.5 percent of over-ageness and 47.6 of normal age. It should be noted that this is computed on a one-year normal age basis.
4. Sixteen percent of the total enrollment is in the tenth, eleventh, and twelfth grades, or senior high school.

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*Medical Supervision in Catholic Schools* is the first of a proposed series of bulletins to be published on the subject of health education by the department of education of the National Catholic Welfare Council. While the bulletin is especially directed to superintendents and supervisors of Catholic schools, it is in large part quite as applicable to public school conditions. It combats the usual arguments against medical inspectors, gives a brief history of medical supervision in America, states clearly its aims, and outlines four different types of service. Of the latter, it recommends the combination of doctor and nurse as affording the most satisfactory service. A number of simple forms are given both for communicating with parents and for keeping permanent records. The analysis of the symptoms of incipient disease among children and especially the signs by which communicable disease may be identified are especially helpful.

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The bulletin of the Bureau of Standards and Statistics of the Chicago Public Schools entitled *Ability of VIII-A Pupils in Geography* presents median scores made by the Chicago pupils and the standards for the test, the range of individual scores, and the distributions by districts. The major part of the bulletin is devoted to objectives clearly and definitely stated for the guidance of the teachers in their classroom work together with a selected bibliography of current articles on geography. All teachers may not agree in detail with the statement of the objectives, but no teacher can read this discussion without clarifying her own thought and consequently improving her practice.

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Doctor Charles A. Wagner, superintendent of schools, Chester, Pennsylvania, believes that figuring the percent of failures at promotion time simply to know the percent is of little value. He has, therefore, attempted to find the loss and gain in terms of semesters for all pupils whose complete records were available. Of a total enrollment of 7,262, the records of 4,242 pupils were complete. Three thousand one hundred and forty-eight had lost time, the loss ranging from one semester to twelve. Six hundred and ninety-three had

gained time from one to four semesters. Not only were these totals ascertained, but each gain or loss was traceable to the pupil by name, grade, school, term, branch of study, and health condition at the time of failure.

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Can the Nation finance the program? The late Franklin K. Lane placed the annual loss to the Nation from illiteracy at $826,000,000, the Provost General placed the loss due to remedial physical defects at a still greater figure. In 1920 the Nation's bill for luxuries was placed at $22,500,000,000 by Federal statisticians, a sum approximately equal to the cost of the Government from the adoption of the Constitution to the declaration of war against Germany, a sum large enough to replace the public school plant from the ground up. The American people own fourteen out of every seventeen automobiles that the world has built. A single State has within the last fifteen years built State roads sufficient to lay three parallel routes from New York to San Francisco and had $200,000,000 left for the development of its canal system.

It may be necessary to cut down expenses, but it should not be done by robbing childhood of its birthright.—*Journal of National Education Association*

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Bulletin 62 of the Bureau of Educational Reference and Research, University of Michigan, gives the results of the Ayres Spelling Test given in October, 1923. The results show: (1) a surprisingly great range throughout the various grades; (2) in grades IV, V, and VI, cities of the smallest population group contained the highest scores, while in only grade VIII did one of the largest cities make the highest single attainment; (3) the level of achievement for grade VI in practically all cities is higher than that of other grades; (4) in general, a higher level of achievement was made in October, 1923, than in October, 1922; (5) an examination of the spelling accuracy on individual words of the eighth-grade list shows a great variation, although all words were taken from a single column in the Ayres list.

Quoting from "the analyses of spelling errors" by Mr. W. J. Osburn of the Wisconsin State Department, the author says that failure to hear and pronounce words correctly is responsible for twenty-five percent of the errors; substituting one vowel for another, 18 percent; using a single for double consonant, 16 percent; while the omission of silent final *e*, will account for 11 percent.

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A survey of the status of physical education in the various states of the United States was recently made by Mr. S. H. Cobb, graduate student in school administration at Ohio State University. An examination of state laws revealed the fact that North Dakota took the initiative in 1899 by passing the first state physical education law. At the present time 32 states have physical legislation. Those having no laws are Arizona, Arkansas, Delaware, Florida, Iowa, Kansas, Montana, Nebraska, New Hampshire, New Mexico, Oklahoma, South Carolina, South Dakota, Texas, Vermont, and Wyoming. Seventeen of the 32 states have physical education supervisors, two of whom are women. Four states have permissive legislation only, three have recre-

ational provision only, and one (Washington) excuses for religious belief. Colorado requires physical examination of each pupil at the beginning of school, but specifically excludes the use of drugs or instruments. Connecticut makes the standing in physical education a part of the graduation requirement. Eighteen states designate a definite time allotment for physical education in the elementary schools. This allotment varies from 12 minutes daily in Illinois to 52 minutes daily in Alabama. The program generally involved rhythmic plays and games in the earliest grades, gymnastics and calisthenics with games in the intermediate, and gymnastics and folk dances in the upper grades. The aims may be classed as educational, corrective, hygienic, and recreative.

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Mr. H. Ching, a graduate student in school administration at Ohio State University, has recently summarized the situation in the study of geography as ascertained by the courses of study published since 1920. He took ten state courses, ten county courses, and ten city courses, covering as wide a distribution of territory as was possible. The states included were: Alabama, Arkansas, Colorado, Georgia, Idaho, Indiana, Louisiana, Nebraska, New Hampshire, and Nevada. The county courses included eight from Ohio and those of Baltimore County, Maryland and Santa Cruz County, California. The cities were Berkeley, California; Chicago; Cleveland; Detroit; Norwalk, Connecticut; Oklahoma City; Pasadena; Passaic, New Jersey; New Haven; and Salt Lake City.

Among the states two began geographical instruction in the first grade and continued through the eight years and one began in the first grade and continued through the seventh; while two teach geography in grades III to VI, inclusive; one, in grades III to VIII; and one, in IV to VII. The counties show two teaching through the entire eight grades, one in grades I to VII, two in grades III to VIII, four in grades IV to VIII, and one in IV to VII.

Two cities begin the work in the first grade, one of which continued it through the sixth and the other through the seventh. Three began in the third grade and continued through the seventh, three began in the third grade and continued through the sixth, one began in the fourth and continued through the seventh, and one began in the fourth and continued through the eighth.

It will, therefore, be noted that without exception whether state, county, or city, geography is taught in grades IV, V, and VI. It is likely to appear as a definite subject in the first two grades, and except in county courses, it is likely to be dropped in the eighth grade. Textbooks are almost always in the hands of the pupils in grades IV to VI, and always in the higher grades, where taught. The time allotment is usually not stated in the course of study, and helpful material from the standpoint of method and sources cited is usually absent.

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In a paper read before the Department of Visual Instruction of the N. E. A., Mr. Ernest L. Crandon, director of lectures and visual instruction, of New York City, pointed out the following significant problems in that field:

1. The increasing demand for stereopticon view and motion pictures in education is not being met because the slide and film have not yet taken their

places in the official professional consciousness as the educational necessities; they are still classed as fads and luxuries. The amount of money available for use, therefore, is much more limited than would be the case if school administrators were really convinced of their value.

2. School administrators and teachers still permit themselves the feeling that they are entertaining the children, giving them a show, instead of using two superlative teaching devices which rest upon the soundest possible psychological foundation. Teachers are neither trained in the technique of using slides and films nor in the psychology and pedagogy of their use.

3. There are two distinct sources of supply for visual material: the official purveyors such as state and municipal departments, universities and museums, and the commercial dealers. The former frequently have not sufficient freedom of exchange of materials, and the second are too well satisfied with their own product.

With special reference to films, and partially true with slides also, the improvements needed are better understandings of school needs on the part of producers; better understanding on the part of school people themselves of the place of visual materials in education; a solution of the problem of a national distribution; and the removal of legal restrictions which were intended for inflammable films but operate equally with non-inflammable materials.

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**Fellowships in the Psychology and Education of the Pre-School Child**

The Merrill-Palmer School of Detroit, Michigan, is offering for the year 1924-25, three fellowships for graduate study in the field of the psychology and education of the pre-school child. A preference will be given to students who are candidates for higher degrees. Some universities have already arranged to give credit for graduate work at the school, and similar arrangements may be made with others. The fellowships pay $1000.00 each.

The Merrill-Palmer School offers the following facilities:

A Nursery School has at present one center with an enrollment of thirty-six children under five years of age, with a second center to be added in the fall of 1924.

A psychological laboratory in which all of the children of the nursery school are carefully measured and re-measured. A new series of tests for young children is being standardized in the laboratory. Many children not enrolled in the school are examined for this purpose.

A consultation center to which physicians, parents and social workers refer young children for diagnosis and advice. The center is equipped to make mental measurements, to give complete physical examinations if these are not already provided for, and to make social investigations. Problems of behavior are analyzed and advice given about treatment. Parents are advised about the educational environment of young children.

Personality studies are made of all of the children in the school, and of all of the children who attend the consultation center.

The school is equipped to offer excellent courses in the health and nutrition of young childhood, which may be taken as a minor by students specializing in psychology.

Applications, giving full particulars of academic background and of previous professional experience (if the candidate has had experience in schools, clinics or social agencies) should be mailed to the Merrill-Palmer School before the end of the present academic year.

HELEN T. WOOLLEY

*Psychologist and Director of the Nursery School*

**Homogeneous Grouping at the J. Sterling Morton High School**

At Morton High School, Cicero (Illinois) all classes in every subject except second-year shorthand are arranged in groups based on the results of an intelligence test, a different one being given every year. Our idea is to group together pupils of the same learning power, without any investigation of their ability in any special subject. After a month or two if a teacher decides that certain members of her classes are distinctly above or below the level of the rest, she reports their names to the testing department where they are given a detailed individual examination, the Stanford Revision of the Binet-Simon Test. The pupil is never transferred unless the teacher's judgment is corroborated. In most cases the recommendation comes back: he has the ability; build a fire under him. Usually this puts new energy into the situation.

We believe that the good results of classification would be more than offset by future troubles if the division did not extend on through the four years, as otherwise the course of study would have to be practically the same for all sections to allow of their going on together. Although our pupils are tested afresh every year, there are few cases of trouble from changes of status. As a whole, the same pupils test high, low, or medium every time.

Practically all of our faculty are energetic supporters of mental testing as against our older method of segregation by teacher's recommendation. The first three years I taught at Morton I had the lowest freshman section which was nothing less than a combination hospital and jail, with the slow-thinking, the stupid, the lazy, the mischievous, and the mean all penned in together, to be handled by one method in one period. Yet like most of the rest, I was skeptical over the idea of division by testing until I met my first really homogeneous class and discovered that I had the chance to fit my subject and method to those minds unhampered by any other consideration. Every single child in that group would undoubtedly have failed in an ungraded class and would have left school embittered and handicapped by a conviction of defeat. Segregated as they were, they went through the year as a singularly contented group, for the first time able to do well what was asked of them. Boys who had been hounded or ignored tasted the satisfaction of being "one of the best in our class." More than half developed a high ideal in connection with their simple exercises. At the beginning of the next year I had the satisfaction of finding eighteen of the nineteen back for the sophomore year. Another class of the same kind had lost only two from twenty-one. Four years of just such classes have convinced me that the first one was in no way exceptional.

Of course segregation implies differences in presentation and in the course of study. In literature we can easily assign shorter and simpler selections to inferior pupils; and even when the same book is assigned to several sections, all recognized as different steps of medium, part may be cut or told. For instance, our accelerated freshmen study *Nicholas Nickleby*, our medium the same adapted by cutting, while the low read *Treasure Island*. Again the high read *Atlantic Narratives*, the low and medium adapted selections from *Atlantic Prose and Poetry*. The lowest sections do little home work.

As for composition, an English committee has agreed upon the formation of certain important habits as minimum essentials for each year, and these essentials are the same in all sections except for some sharp differences in

grammar in the freshman work. Upon this basis, high sections build a structure of extensive technique and of creative and imaginative expression, while low sections form no habits except those listed as essential and confine their writing to the simple and the immediately useful.

Segregation not only demands separate courses of study, but also puts on each teacher the responsibility of living up to the possibilities of her group. It is hard for anyone to be sure she is doing this unless her results are compared with those of the classes above and below. At Morton we are trying to furnish this comparison by giving tests on the minimum essentials common to all classes, and by sending the teacher notice as to how her class stands in the line after each test. That is, a class fourth in intelligence should be fourth in show of habits.

These tests are given to the entire school the fourth Monday of each month and are eagerly anticipated by most of the students, who enjoy measuring their ability by an impersonal and definite standard. The occasion is given importance by the fact that the principal starts the tests in all of the rooms and leaves instructions for them to be sent to him in the office. For at least a week before time for this test the breeze of enthusiasm blows through the school. The formation of certain habits becomes a matter of prime importance. Puzzling cases are brought in and discussed. Brows ordinarily too smooth are furrowed with attention, and help outside of class is eagerly sought.

Of course there are always pupils who fail to acquire the necessary habits and fall far below the standard of their groups. Wherever the class as a whole shows mastery, these are assigned to extra work in a special class repeating the minimum essentials of the last month.

The teachers are quick to appreciate the value of the earnest "will to learn" aroused by these monthly tests. But unless the tests can be safeguarded against two or three obvious dangers, it is useless to expect their continued cooperation. In the first place, everyone must agree that the test was a fair one. What one teacher considers important seems merely incidental to another, and there are always differences of opinion as to methods of punctuation. The teacher new to the school and the science or language teacher with a single group in English feel that their classes are at a disadvantage. To offset this, the English committee sends a preliminary bulletin calling attention to all essential points, giving illustrations, and ruling on disputed details. Again, when results are to be compared so definitely, papers must be corrected with utmost precision. They cannot successfully be scattered throughout the department. Of course, if pupils could be transferred at the will of the teacher, another danger would threaten; there would then be a tendency to demot those having the poorest habits. Our method safeguards the teacher below. We have also discovered that it is effective enough to send each teacher a report on her own classes, without making the results public to the entire department. Thus there is no personal rivalry; pupils and teachers merely try to maintain their places in the line. Often they are so successful in this that seven and eight classes in a row will maintain the exact position originally given them by the intelligence test.

It seems to me that the scientifically graded class of whatever mentality might be called the class of the unglazed eyes. The impatient superior pupil,

whose eye used to take on the film of boredom in the ungraded or poorly graded class, is taxing his ability to the uttermost to compete with others of his kind; the pupil of medium ability, relieved of the scornful presence of his especially gifted classmate, dares to express himself and begins to come into his own; and the slow or the inferior pupil comes out of the daze in which he has been wondering what it's all about and little by little develops the self-respect of one who knows he is a match for his environment.

*Cicero, Illinois* J. GRACE WALKER

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The following facts were secured by a questionnaire answered by 158 of the failures and weak students in one of the Los Angeles junior high schools and are quoted from the January 7 issue of the *Educational Research Bulletin* (Los Angeles):

| | *Percent* |
|---|---|
| Frequent headache | 22.0 |
| Frequent toothache | 11.4 |
| Decayed teeth | 25.1 |
| Breathe through the mouth | 21.8 |
| Frequent sore throat | 6.5 |
| Discharging ear | 5.0 |
| Poor appetites | 14.5 |
| Do not use milk | 37.2 |
| Do not use fruit or fresh vegetables | 10.0 |
| Admit to irritability | 31.6 |
| Physically very nervous | 35.5 |
| Much worried | 6.7 |
| Learn readily but forget | 22.2 |
| Have had more than two colds in two months | 24.6 |
| Overweight | 23.4 |
| Under-weight | 32.0 |
| Do not hear well | 11.9 |
| Cannot read blackboard work | 5.7 |
| Eyes hurt when they read or sew much | 20.0 |
| Have never had their eyes tested | 45.6 |
| Need glasses | 13.7 |
| Do not get eight hours sleep | 13.2 |
| Have other illness or defects which they think are interfering with their school work | 11.8 |
| Work all day Saturdays | 22.0 |
| Spend more than two hours daily on duties other than school work | 40.7 |
| Do not regularly prepare lessons | 12.5 |
| Practice music an hour daily | 3.8 |
| Take other outside lessons | 6.8 |
| Sell papers | 15.1 |
| Have delivery jobs | 9.6 |
| Help with home work one hour daily | 37.7 |
| Have no quiet place at home for study | 14.6 |
| Have mothers employed outside the home | 27.8 |
| Do not regularly spend their evenings at home | 18.8 |
| Have no one at home who can help them with their lessons | 40.1 |
| Admit of bad companions | 6.2 |

Many of the items at least are of sufficient significance that it would be worth while for other administrators to learn the extent to which they are factors effecting the work in their own schools.

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